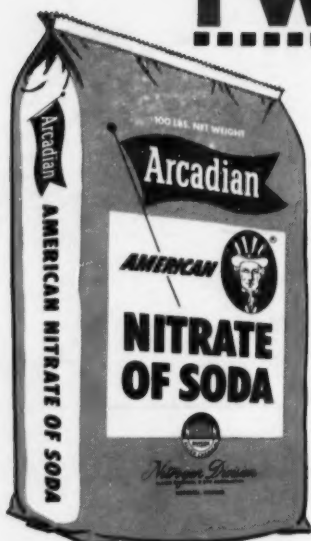


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TWO top-quality top-dressers!



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Nitrate of Soda

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COMMERCIAL FERTILIZER

ESTABLISHED 1910

June, 1954

Volume 88 No. 6

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COMMERCIAL FERTILIZER



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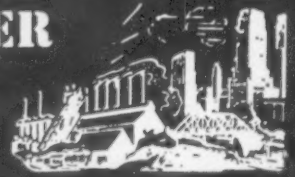
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JUST AROUND THE CORNER

By Vernon Mount



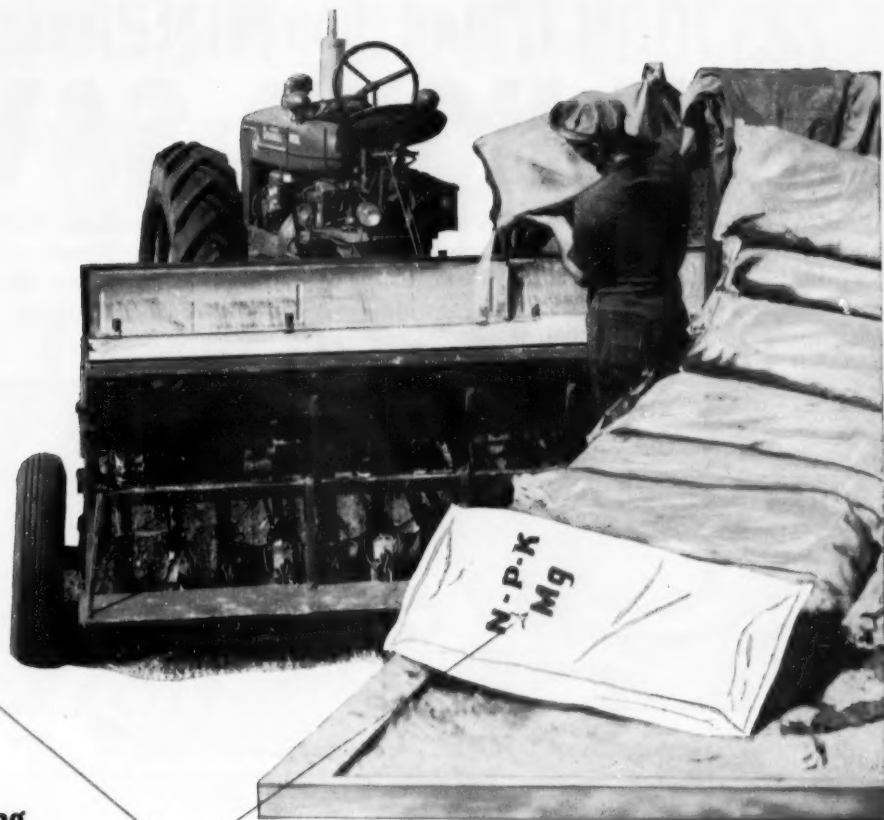
"REMEMBER DIEN BIEN PHU" fails to strike the same chord in the American bosom that used to respond to "Remember the Alamo," "Remember the Maine," "Remember the Lusitania," Remember whatever it was we were to remember in the last war. There is a tendency to do things with the last syllable of the name of that fallen Indo-China city. And to be a lot more interested in the fate of that nurse than of the several thousands of men, headed by the officer who finally got to be a general.

HISTORY WILL REMEMBER because Dien Bien Phu is a turning point. We either do something about it, or we don't. The USSR will take note of our action or failure to act, and be guided as to future plans. Even fiery Singhman Rhee is now willing to take half a loaf when before he wanted cake with frosting, because he doubts that we'll give him cake.

NOT UNTIL ELECTION will we know, really, which way the US worm will turn. Meanwhile the draft numbers are gently stepped up. The whole defense picture is being reviewed. Next Winter may well see us on a semi-military economic basis again.

Yours faithfully,

Vernon Mount



in

put it in the bag
put it on the bag

on

Sul-Po-Mag®

WATER-SOLUBLE $K_2SO_4 \cdot 2MgSO_4$
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contains soluble magnesium—often called the fourth element!

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Sul-Po-Mag, produced only by the Potash Division of *International*, furnishes both magnesium and potash in sulfate form . . . properly balanced and water soluble for immediate availability to the plant. It is supplied in bulk for use in mixed fertilizers and bagged for direct application. So, include *Sul-Po-Mag* to supply soluble magnesium. Put it *in* the bag . . . and put it *on* the bag: Nitrogen, Phosphate, Potash, *Magnesium*.



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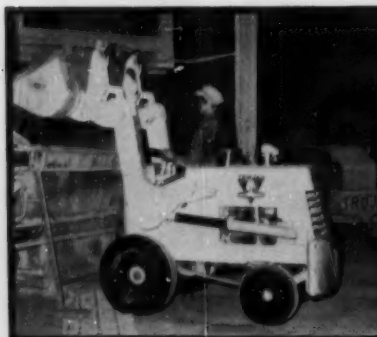
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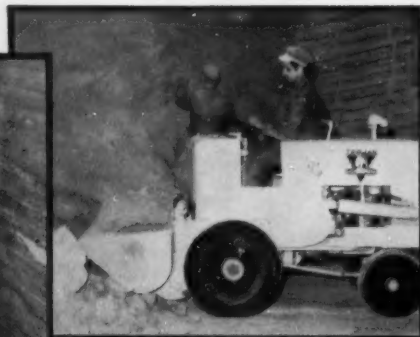
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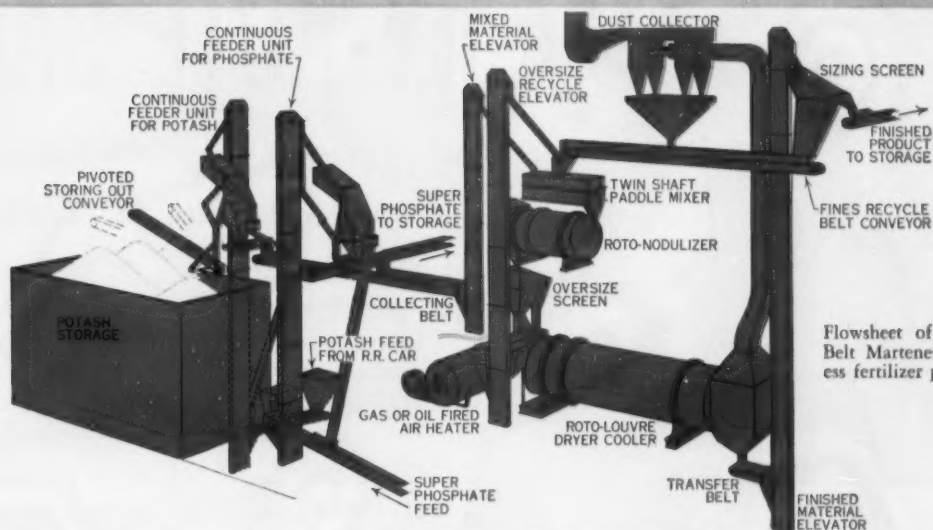
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... for better fertilizer at lower cost!



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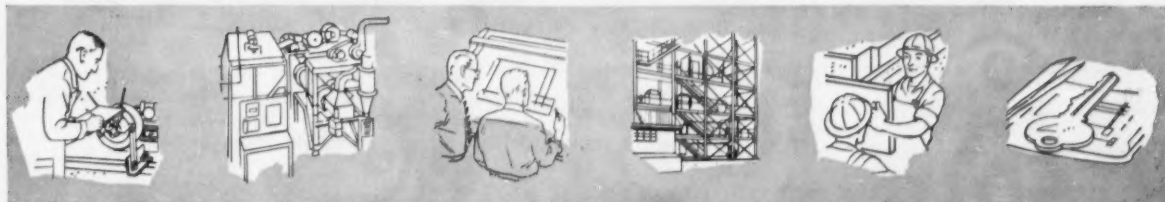
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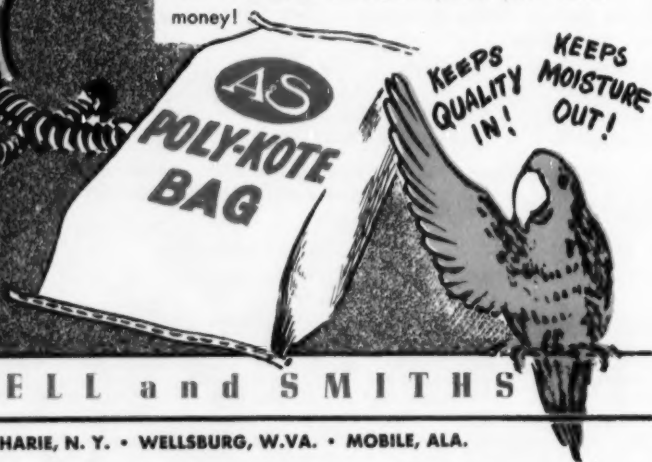
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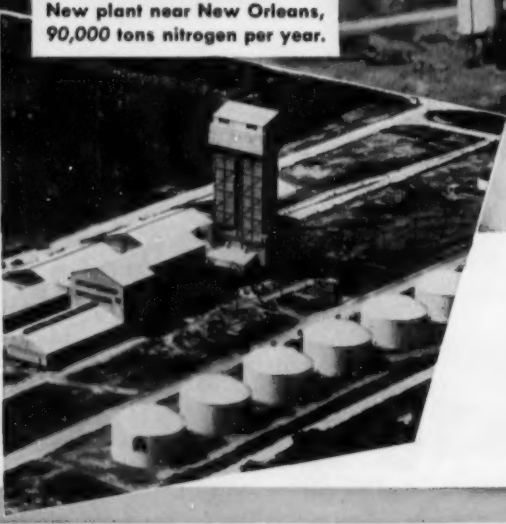
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**Republic top-quality Ammonium Sulphate
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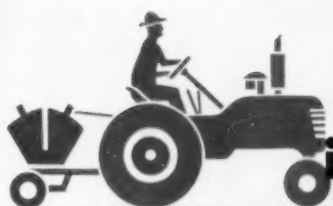
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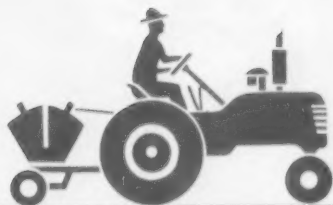
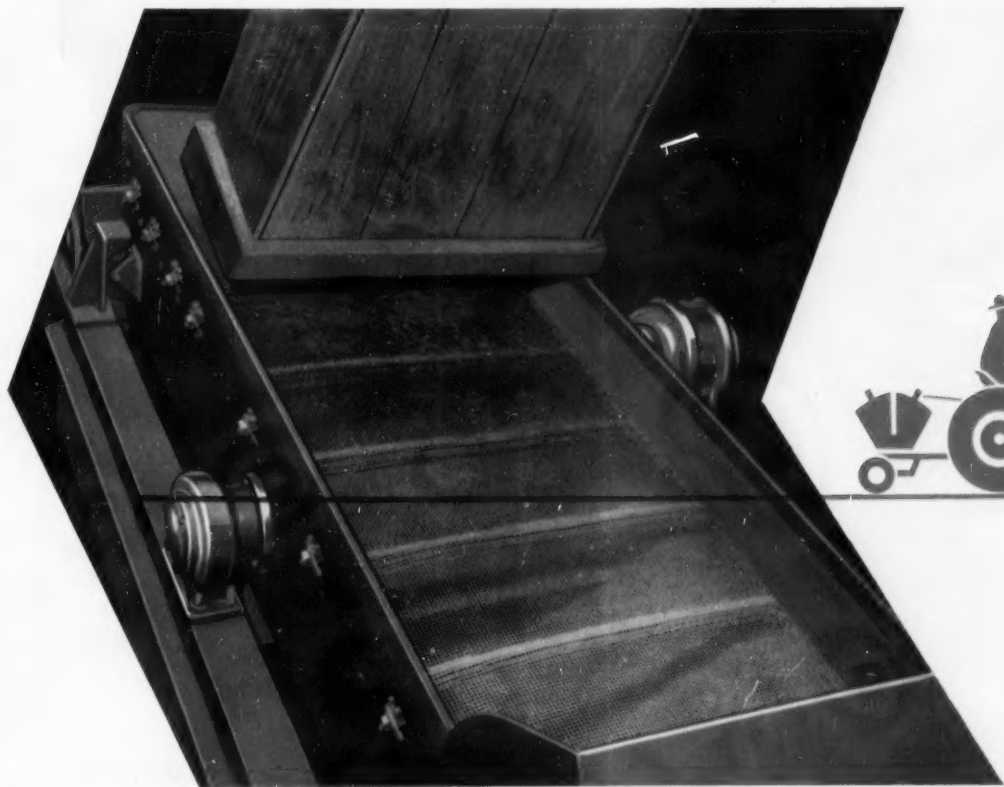
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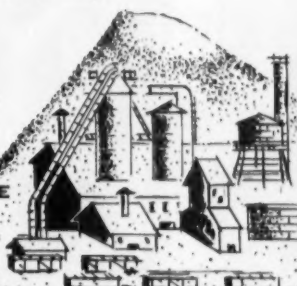
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NITRATE

NITROGEN

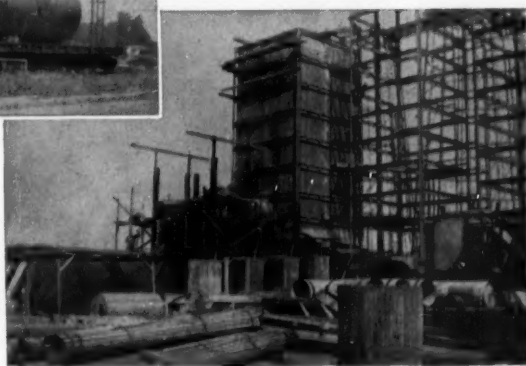
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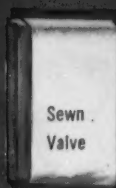
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2 Integrated Plants

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Mouth



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Mouth



Flat
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Mouth



Flat
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Gilman Paper Company Subsidiary

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*TRADE MARK

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• Three years before the inventor of the reaper built his first factory in Chicago in 1850, the Chase Bag Company was making better bags for American agriculture and industry.



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maximum product protection and package appeal. You cannot put your packaging problems in more capable hands. You cannot put your product in better bags. Contact your "C"-Man today!

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BURLAP BAG



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The Chase MULTIWALL bag assures you of maximum product protection at minimum cost. Once the bag is closed, your product is safe in these spill-proof, tamper-proof packages. Available in all types—2 to 6 plies.

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Bemis dress print cotton fertilizer bags...

your
"the extra that pushes a sale ~~our~~ way!"

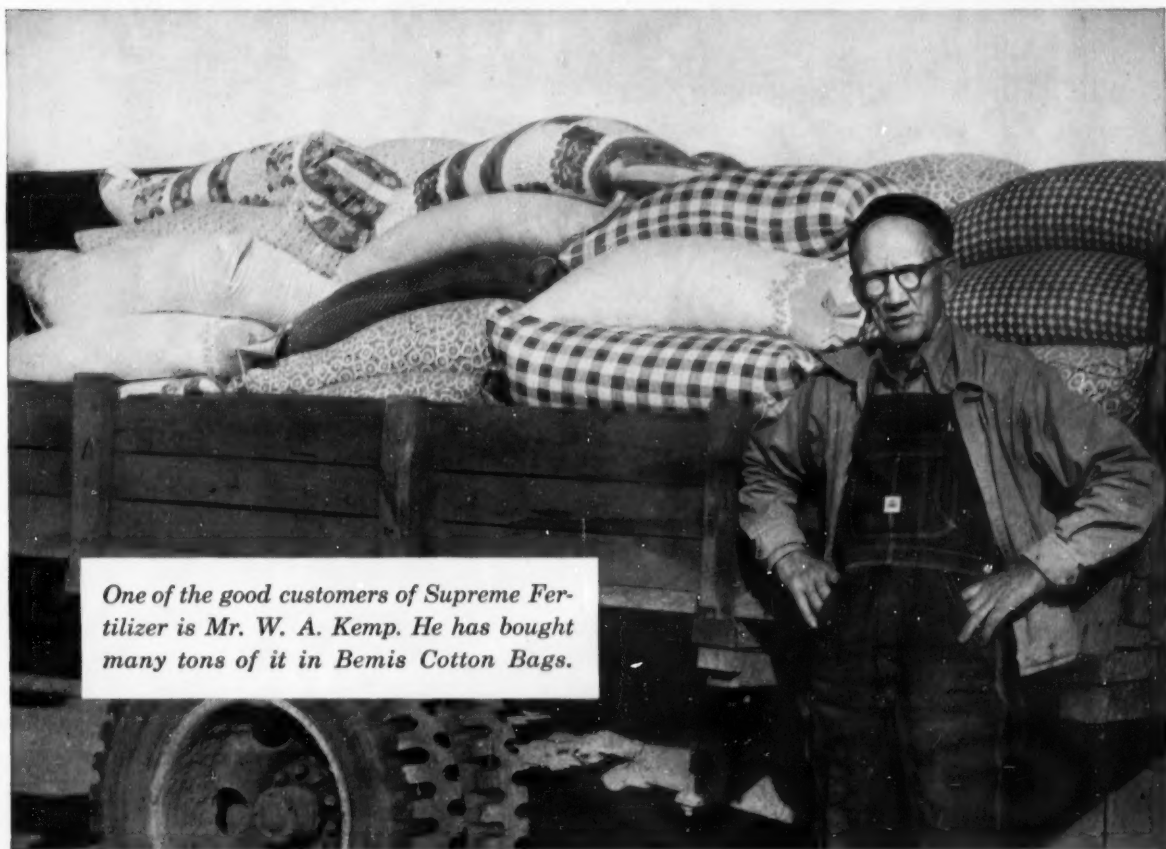
Read this statement from Mr. Hugh Latimer, vice-president of the Supreme Feed & Fertilizer Co., of Philadelphia, Miss. It really tells the whole story... shows why YOU will benefit by packing YOUR fertilizer in Bemis Cotton Bags.

"We have noticed that an attractive Bemis Dress Print Bag can often be the extra that pushes a sale our way.

In most farm families, that piece of goods is a bargain that makes them happy and keeps them friendly."

Hugh Latimer

Hugh Latimer, Vice-President
Supreme Feed & Fertilizer Company



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Sturtevant Leadership in Fertilizer Granulation...

2 PLANTS COMPLETED *One Under Construction*



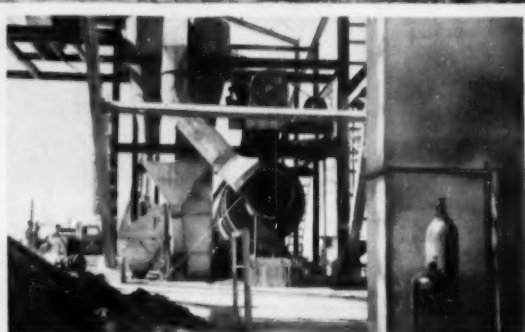
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Two plants completed in Texas . . . one under construction in Canada prove Sturtevant leadership in plant design, manufacture of equipment, and supervision of construction for the granulation of mixed fertilizer.

These new plants incorporate all the latest techniques and equipment for *economically* manufacturing granular fertilizer.

A recognized leader in the industry, Sturtevant Mill with its vast fertilizer manufacturing experience and know-how can effect operating economies for you.

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Better quality control
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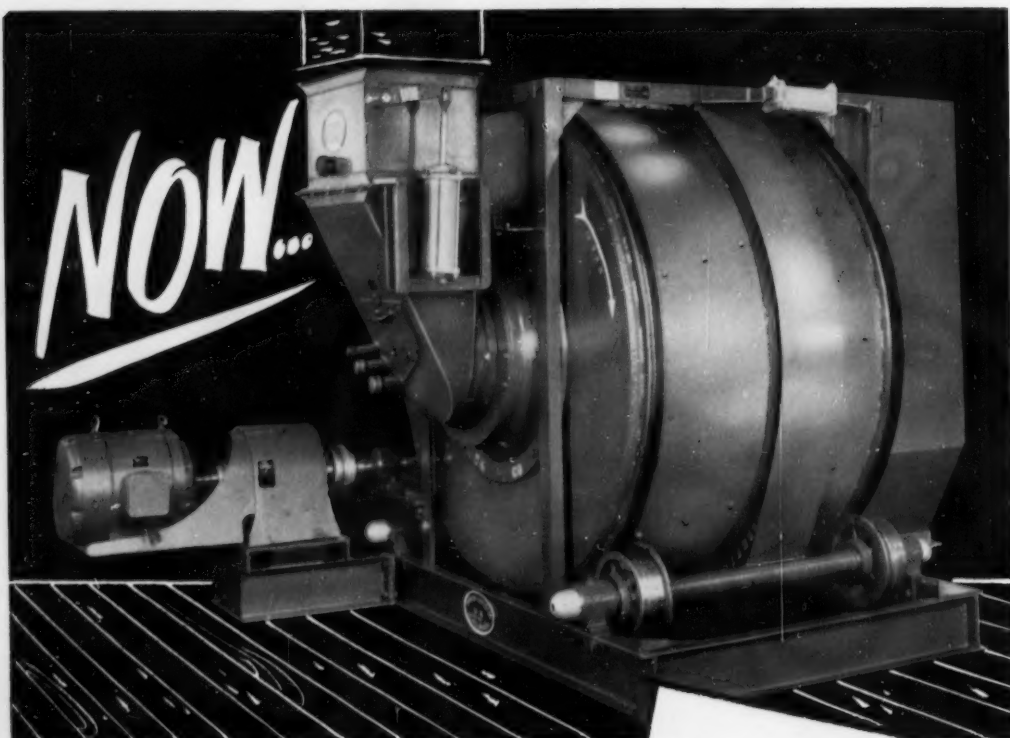
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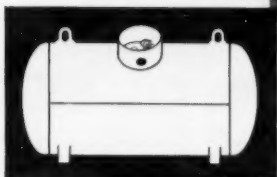
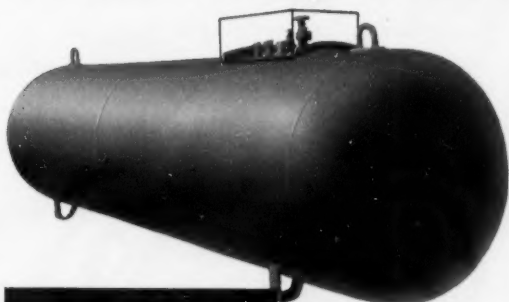


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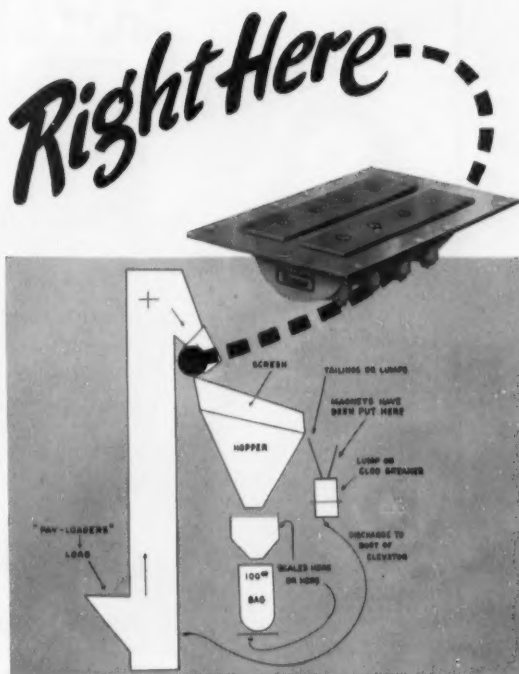


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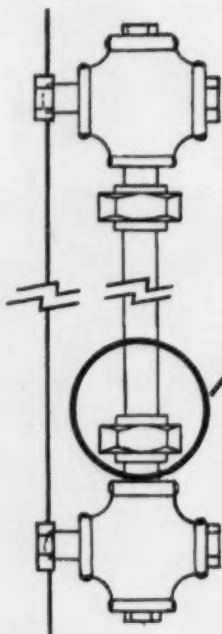
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The combination of a Tullco modified union and rubber bulb gasket guarantees a leak-proof connection.

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WRITE for Bulletin No. A-378



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THE EQUITABLE STORY...



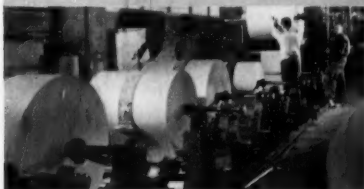
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A bumper crop starts with good seed and soil . . . ample patience, skill and toil . . . and above all the vision to fortify and perpetuate nature's bounty.

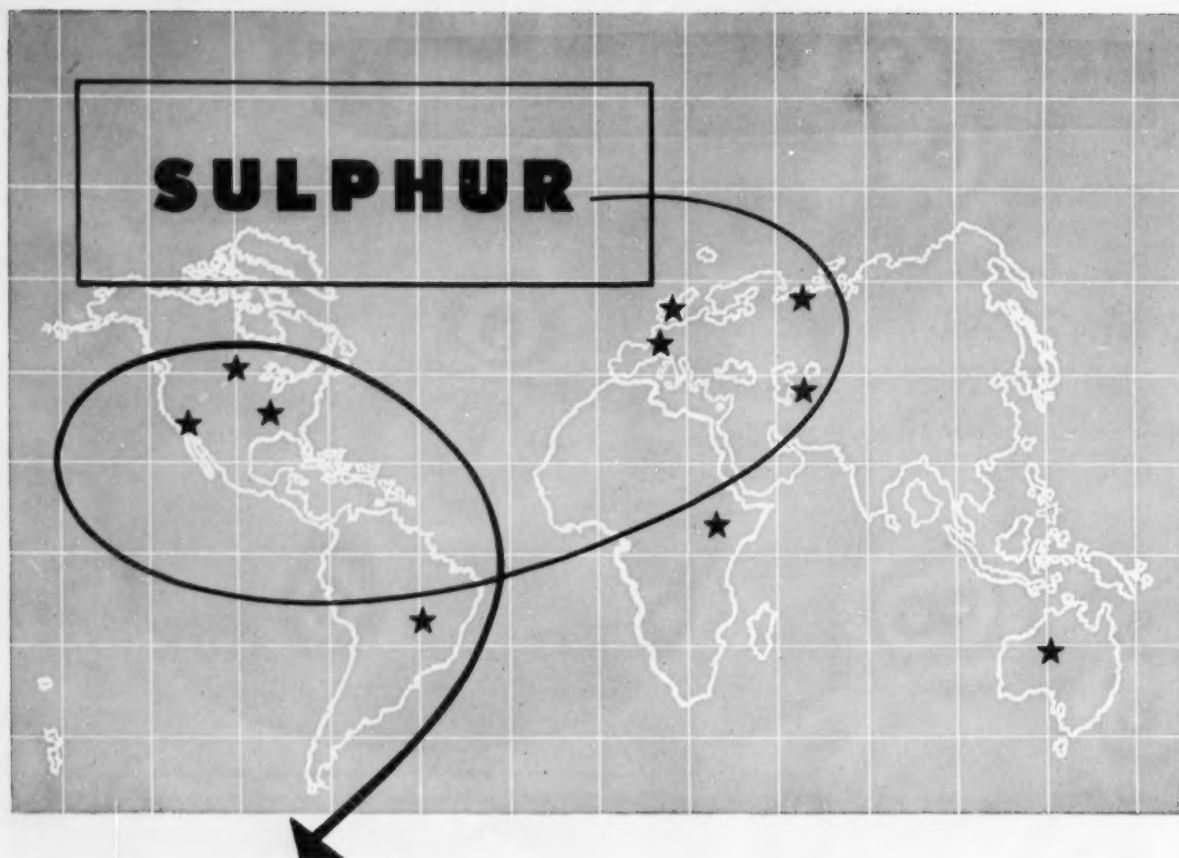
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Sulphides of iron, copper, zinc and hydrogen and calcium sulphate are all sources of sulphur dioxide, the starting point of the manufacture of that universal and all important chemical tool, sulphuric acid.

Elemental sulphur, *per se*, is essential for such compounds as carbon bisulphide, rubber vulcanizing and certain fungicides, insecticides and black powder. Economics dictate the use of the element or the sulphides or sulphate for other products and processes.

*International Minerals Conference, 1952-53

Texas Gulf Sulphur Co.

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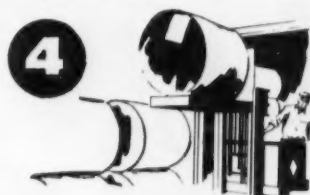
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CONDITIONING AGENT FOR COMMERCIAL FERTILIZER—Aquafil is the product stabilizer that ends caking in the bag.



2
DILUENT FOR INSECTICIDES—With Aquafil you get high concentration which means savings.



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Density: 9.6 pounds per cubic foot.

Fineness: 95.8% through 325 mesh.

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• More and more users of diatomaceous earth are turning to Aquafil . . . and finding it profitable. Aquafil offers you a high quality product, from North America's largest level deposit . . . and at less cost. It will pay you, too, when you look into the use of Aquafil as a means of improving your product, as it increases your profit margin. Next time you order diatomaceous earth . . .

Specify **AQUAFIL!**

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Phillips supplies **NITROGEN** in 4 forms

1 AMMONIUM SULFATE

New Premium Quality Phillips 66 Ammonium Sulfate is available now! It's dry-cured to remove excess moisture—prevent caking. Uniform, dust-free crystals flow freely—mix easily. Contains 21% nitrogen, ideal for all analyses of mixed goods and for direct application to all farm crops. Contact us now for your requirements.

2 ANHYDROUS AMMONIA

Tank car shipments of Anhydrous Ammonia (82% nitrogen) are assured to Phillips contract customers by Phillips huge production facilities in the Texas Panhandle and at Adams Terminal near Houston. Write our nearest Division Office for full information.

3 NITROGEN SOLUTIONS

Get more N per dollar! Phillips 66 Nitrogen Solutions are well suited to the preparation of high-analysis fertilizers and the ammoniation of superphosphate. These three nitrogen solutions keep handling costs low! Promote rapid, thorough curing!

4 AMMONIUM NITRATE

Phillips 66 Prilled Ammonium Nitrate contains 33% nitrogen. The small, coated prills or pellets resist caking . . . handle easily. Depend on Phillips 66 Prilled Ammonium Nitrate for uniform, free-flowing properties and top-notch crop response.

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PASADENA, CALIF.—604 Citizens Bank Bldg.

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● **TIGHTER SEAL**

Special flexible paper combined with Fulton's new design, gives extra tight sealing action.

● **SEATS SECURELY**

With its longer edge, the sleeve is sewn in more securely; slipping and unseating is eliminated.

● **NO INCREASED COST**

Fulton's newest development—the Ful-Flex Sleeve—is available at regular prices.



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Please forward more information on Fulton's Ful-Flex
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A HIGHLY MANEUVERABLE POWER SHOVEL

Lessmann LOADALL scoops up big loads of the most heavily compacted ingredients or finished fertilizers... does it in 5 seconds while standing still! Extra hydraulic cylinders supply Hydraulic Power Crowd. This means loading with hydraulics which eliminates ramming and spinning of wheels... *minimizes repairs, reduces maintenance!* Dozer blade is easily attached for yard maintenance. Crane-hook, lift forks, snow and trash buckets are also available.

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LOADALL has clearance for the highest trucks, bins and mixing hoppers. It loads or unloads at any height from 12" below wheel level to 108" above. Wheelbase of 73" and 12' turning radius make it highly maneuverable.

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Here's a full 4'4" reach at maximum clearance! LOADALL carries load close but quickly boosts it 'way out ahead for easier loading... another advantage of Hydraulic Power Crowd.

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✓ **STANDARDIZED PARTS.** Ford, Timken, Vickers, Bendix, etc., assure highest quality components and low-cost servicing.

✓ **SAFETY.** Operator has unrestricted visibility and is protected from loader arm.

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✓ **LOADALL BUCKETS.** Available with capacities of $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$ and $1\frac{1}{2}$ yards.



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What Replaces Cotton Acres?

The Cotton Trade Journal,—international newspaper of the cotton industry, has sought an answer to the question—what crops will farmers plant on acres lost to cotton? Taking off from the premise that 6,135,000 acres will be planted in other than cotton crops, they asked their subscribers what would replace this crop in 1954. Answers came in from 854, who in 1953 planted 5,334,599 acres, of which 2,649,565 were in cotton. This year those 854 will grow 521,424 fewer cotton acres.

The use of these 521,424 acres were revealed by the farmers, and the following percentages are given by Cotton Trade Journal as the plans revealed, in percentages of the 521,424 acres:

Small grains	41.77%
Corn	39.16%
Soybeans	38.58%
Hay	27.51%
Miscellaneous	26.98%
Beans (Misc.)	20.34%
Feed	17.33%
Pasture	16.39%
Lay out	13.22%
Sugar beets	8.33%
Potatoes	6.54%
Pimento Peppers	6.25%
Tomatoes	6.25%
Fruits	4.88%

Assuming the 854 farmers are typical, projections can be made to show the acreage to be devoted to these crops in the 14 states surveyed.

In addition to the crop question, the plans of the farmers were revealed as to purchases of fertilizer, insecticides, defoliant, equipment and machinery.

9.94% planned increased fertilizer purchases; 44.70 planned no change; 45.36 planned to buy less.

4.54% planned increased insecticide buying; 47.96% no change; 47.50% less.

2.33% planned more defoliant use; 53.05% planned no change; 44.62 planned decreases.

It Seems to Me

by BRUCE MORAN



The protest of the potash people which caused the Treasury to begin an investigation into "dumping" of potash on our markets by the Russian satellite, East Germany, raises a question of grave import to the whole fertilizer industry, world wide. The foreign section of "Around the Map" shows a steady rise in fertilizer production throughout the world, much of it being encouraged, some of it being financed, by our own people.

As this new capacity comes into production, unless the peoples of the nations around the world learn to use fertilizer freely, there may well be a general, international "dumping" problem.

It would be well for those of us with close international connections to keep a keen eye on the situation. We can control dumping into our own country from proven Russian sources. When we have financed the development ourselves we should have some say so about dumping in other markets. And when you trace back the financing of most foreign developments, American money is likely to be at the root of much of it.

2.54 were to increase their equipment and machinery investment; 45.42 no change; 52.04 reported planned decrease.

The report published by Cotton Trade Journal breaks these figures

down by states, both as to substitute crops and by purchasing plans. More details may be secured by writing The Cotton Trade Journal, Hickman Building, Memphis, Tennessee.

INDUSTRY CALENDAR

Date	Organization	Place	City	State
June 10-12	APFC	Homestead	Hot Springs	Va.
June 14-16	NFA	Greenbrier	White Sulphur	W. Va.
July 1-5	Canadian	Manoir Richelieu	Murray Bay	Quebec
July 20-22	Pacific Conference	Klawath Falls AES		Oregon
Oct. 18-19	Fertilizer Section	LaSalle Hotel	Chicago	Ill.
Nov. 8-12	Crop, Soil	St. Paul Hotel	St. Paul	Minn.
Nov. 10-12	NFA	Hollywood Beach Hotel	Hollywood	Fla.
Nov. 15-16	CFA	del Coronado Hotel	Coronado	Cal.
Dec. 2-3	Cotton Insect	Adolphus	Dallas	Texas

Hitch your fertilizer wagon

This title hints that there are big doings ahead for the chemical plant food industry. There had better be, because in the next twenty years food will be needed for some extra 50 million people in the U. S. A. A tenth of these people will probably want to live in the climate of California.

This brings up some interesting speculations.

First, let us ponder a few critical facts, principles, and situations as they look to me. I speak only as one person and only express myself in the hope we all can understand ourselves better.

Farming must be a sound business that produces much per man hour. If farming is not a sound business that is highly efficient, it will become in the end what farming is today wherever a woman and an ox are hitched to a stick for a plow. Let's have less of such in all the world.

Farming must move towards top efficiency in yields in crops, with freedom from plant food hunger of any kind, and freedom from diseases, insects and soil erosion. We have most of the facts and materials for this. Why put up with these limitations that can be removed,

thereby paying a good profit? Water is probably our greatest limitation.

The control of surplus production that floods the markets to demoralize prices in free markets will be achieved by high efficiency to lower costs. This will be hard on inefficient farmers who can't lower costs or can't meet the competition. Look what happened to the blacksmith who tried to make automobiles, or the wagon maker who wouldn't or couldn't change.

However, in the longer pull all of us gained, even those who had to change occupations.

This is not a pleasant prospect for those who are pressed hard. It is here we must help people to find better ways for their employment. Yet, like it or not we should be honest enough to face this inevitable trend towards efficiency and pressure of competition. The facts do indeed show that this trend is on.

A full socialization of farming would likely stop this trend towards efficiency, and probably would bring on hunger—even on the land. Freedom for new enterprises and progress would surely be dead—we are not yet loving enough for a Utopia.

The value of farm land will level off to be in line with what it can produce by the best techniques and best management. Land values inflated by urban pressure, real estate speculations or hedges against dollar devaluations seem incompatible with land values based on potentials and capacity of the land to produce. Such inflated land values place an excessive burden of capital overhead for any farmer who wants to remain a farmer or to keep the farm "in the family" through sons and daughters. A factory can be evaluated only on its worth determined by what is manufactured in it and the value of its output.

Farm prosperity in the future will be even more closely linked with

COAST CONFERENCE ATTRACTS 250

The Second Annual Fertilizer Conference engaged the attention of 250 farmers, officials of the University of California and the USDA, and fertilizer industry representatives. The Conference was sponsored jointly by the University of California Agricultural Extension Service and the Soil Improvement Committee of the California Fertilizer Association.

Dr. George D. Scarseth, Director of Research, American Farm Research Association, Lafayette, Indiana, was the featured speaker following dinner on April 29. His subject was "Hitch Your Fertilizer Wagon to a Star." He referred to his title as hinting that big things are ahead for the fertilizer industry, and then said, "There had better be, because in the next twenty years food will be needed for some extra 50 million people in the U. S. A., a tenth of whom will probably want to live in the climate of California." He said that "farming must be a sound business, efficiently producing the maximum per man hour. The control of surplus production that floods the markets to demoralize prices in free markets will be achieved by high efficiency to lower costs. Farm prosperity in the future

will be even more closely linked with the whole national economy than in the past. The only way we can survive as a relatively free people will be as the nation daringly expands into new jobs, new foods, new everything."

The staffs of the Tulare and Kings County Farm Advisors presented reports on fertilizer experiment work on the morning of April 29 and conducted a field tour that afternoon, for inspection of several test plots and alkali reclamation work.

The program on April 30 was sponsored by the Soil Improvement Committee, California Fertilizer Association. The theme was "Phosphate," and papers were presented by technicians of the University of California Agricultural Experiment Station, the Extension Service, and representatives of the commercial fertilizer industry. An interesting panel discussion on problems of phosphorous fertilization of California crops completed the program. Dr. D. G. Aldrich, Jr., Citrus Experiment Station, Riverside, was panel moderator, and others participating were representatives of the University of California and the fertilizer industry.

to a Star

By DR. GEORGE D. SCARSETH, Director of Research
American Farm Research Association
At 2nd Annual Fertilizer Conference

the whole national economy than in the past. The only way we can survive as a relatively free people will be as the nation daringly expands into new jobs, new things, new foods, new everything. Where such an expansion leads to is the concern of the unknown generation to come—they will likely want more of it in their time. We seem to be on our way for a lot of good times for the next generation or two. Look at our best youngsters—they look good.

Freedom for progress and individual worth will become a greater issue as we increase in numbers.

Now then, what about new techniques in farming? We are probably at the frontier in a new revolution in new methods for producing foods. Whatever comes, it must start from where we are and not in some dreamy cloud that promises "pie in the sky."

Some things we will see in our times.

1. Hunger signs in our crops will not be tolerated. This is where our best growers are now. This is the current and future market for the Chemical Plant Food Industry, because there is more hunger in the fields of our nation than is economical for the farmer. To correct this deficiency is just one of our jobs. It is not a case of more on more land, but more on fewer acres so as to save on overhead costs. The auto manufacturer doesn't make all the cars he can build factories for, but cuts all costs possible to make as many cars as possible within as small an overhead as possible. Competition won't let a poor builder with many curable deficiencies survive.

2. We will give more attention to food quality. Not only fully and balanced fed crops will be wanted, but more attention will be directed to proteins and their amino acids, vitamins and minerals for man and animals. This job starts in the Fer-

tilizer Industry as much as anywhere else. To wait and "Let George do it" will be too long. I know the Georges.

3. A value hardly appreciated is that of the rumen in cattle to convert cellulose and low digestible crude carbohydrates plus chemical ammonia nitrogen into foods man can use. We have practically lost the animal fats to plant fats. We have almost overlooked the value of a ruminant to make protein foods for man. I have called the rumen—"The dark greenhouse in a cow." Perhaps the process in the rumen can be taken outside of a cow to

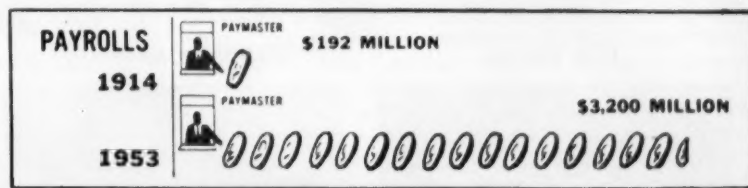
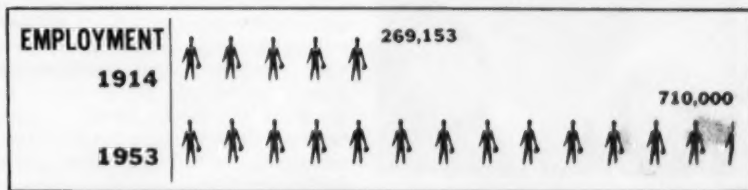
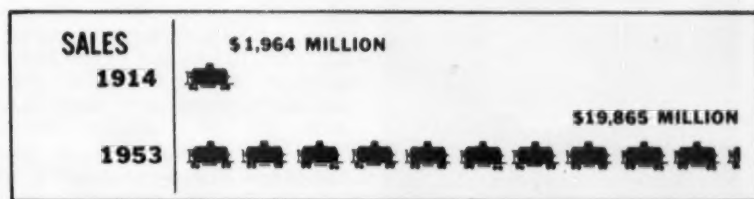
make protein foods artificially for non-rumens as hogs and poultry. Professor M. E. Muhrer of the University of Missouri, and perhaps others are trying this.

4. Why not make food with Single Celled Plants? It is more than a Buck Rogers dream that the simple elements such as our field crops use to make plants for our food can be converted into food by single-celled green plants called algae. This is actually in experimental development now. This food can have a high protein value.

This can mean much to a sunny
(Continued on page 77)

U. S. CHEMICAL GROWTH

THE INDUSTRY ADVANCES IN SEVEN-LEAGUE STRIDES



Nitrogen Division Life recently published this graph, which is of interest to our industry because we are the largest single unit of the chemical industry. Back of the 1914-1953 growth is the fact that, growing at the rate of 6% a year, chemicals and allied products now account for 7% of all manufacturing production in the U.S. Forecasts, according to Nitrogen Division Life are that chemicals will increase 75% in the next 10 years. This industry, only 50 years old, is growing half again as fast as the manufacturing industry as a whole.



APFC ALL SET FOR JUNE 10-13 MEETING

Secretary Benson



Having covered the American Plant Food Council convention plans pretty thoroughly last month, this is in the nature of a roundup of last minute information. The pictures on this page supplement those we showed in May. Those above are staff pictures from last year, showing how much fun can be had at the Homestead, Hot Springs, Virginia, where the APFC folks will meet June 10-13.

Secretary Benson speaks at both APFC and NFA conventions. J. M. Eleazer, Clemson information specialist, and Stanley Andrews, Michigan State's director of their national project in agricultural communications, are two panel members not shown last month. Dr. H. B. James, Head of the North Carolina State College department of agricultural economics, will speak June 12 to APFC on "The Agricultural Economic Outlook."

We have late word on the golf

tournaments, which will be held June 11-12, with 25 prizes—three for low gross each day; six each day for low net—three of them for the over-fifties (in age) and three for those younger than fifty—three daily for kickers and, if we read the bulletin aright, one for nearest the pin. There will also be prizes for the ladies' putting contest, and for four classes of tennis competition.

The ladies, too, are well taken care of with golf, bridge, canasta and other games—all with door and table prizes. They have their own tea Thursday afternoon. Naturally they attend the reception on Friday, the hospitality hour on Saturday and the dinner and dancing which follows.

And that rounds up everything new we have to tell you this month about the Council's 9th annual convention. But look for a detailed story, with staff pictures of the convention in our July issue.

J. M. Eleazer



Stanley Andrews



Dr. H. B. James





DINGS

TUCKER

MODERATOR
KAPUSTA

ANDERSON

SMITH

PROGRAM OF NFA JUNE 13-16 MEETING

GREENBRIER, WHITE SULPHUR

JUNE 13-16

Sunday, June 13

7:30 P.M. Meeting of the Executive Committee

8:30 P.M. Registration Begins

Monday, June 14

8:00 A.M. Breakfast Meeting—Committee on Publications

9:00 A.M. Registration Continued

9:00 A.M. Meeting of the Board of Directors

11:00 A.M. GENERAL MEETING — Louis Ware, President, International Minerals & Chemical Corporation, and Chairman of the Board, The National Fertilizer Association, presiding. Invocation: Rev. D. L. Beard, Pastor, First Presbyterian Church, White Sulphur Springs, West Virginia. Address: "Agriculture Moves Towards Useful Abundance," Honorable Ezra Taft Benson, Secretary of Agriculture

4:00 P.M. to 5:30 P.M. Garden Party for Ladies—Music by Ensemble of Meyer Davis Orchestra

6:00 P.M. Refreshment Hour—American Potash & Chemical Corporation, H. J. Baker & Bro.

9:00 P.M. Reception—Southwest Potash Corporation

10:00 P.M. Cabaret Party—Music and Dancing—Meyer Davis Orchestra

Tuesday, June 15

8:30 A.M. Breakfast Meeting—Plant Food Research Committee

10:00 A.M. GENERAL MEETING — Address: Louis Ware, Chairman of the Board of Directors, The National Fertilizer Association. Address: "Putting the Atom to Work in Industry and Agriculture," Honorable W. Sterling Cole, Congressman from New York, and Chairman of the Joint Congressional Committee on Atomic Energy. Business Meeting

2:30 P.M. Ladies' Bridge and Canasta Party

6:00 P.M. Refreshment Hour—International Minerals & Chemical Corporation

7:45 P.M. Convention Dinner

9:30 P.M. to 1:00 A.M. Dancing, Entertainment: Ned Smith and June Sayer—"Sweethearts of Song," Raymond Chase—Concertina Virtuoso, Music—Meyer Davis Orchestra

Wednesday, June 16

9:30 A.M. Organization Meeting — New Board of Directors

10:00 A.M. SYMPOSIA—Sponsored by Plant Food Research Committee. 1. What Makes Fertilizer Move? O. E. Anderson, Secretary, Ohio Bankers Association, Harold R. Dinges, Director of Product Sales, Spencer Chemical Company; George E. Smith, Professor of Soils, University of Missouri; Moderator: H. H. Tucker, President, Coke Oven Ammonia Research Bureau. Audience Participation Invited. 2. Granulation. W. W. Coffin, Link-Belt Company; Robert J. Engelhardt, Project Engineer, John J. Harte Co.; John O. Hardesty, Senior Chemist, Agricultural Research Service, U.S. Department of Agriculture; L. D. Yates, Division of Chemical Development, Tennessee Valley Authority. Moderator: Edwin C. Kapusta, Chemical Engineer, The National Fertilizer Association. Audience Participation Invited
12:00 Noon Adjournment

NFA PLANS DIVERSIFIED PROGRAM

Events of special interest to management, sales, engineering and plant operation personnel of the fertilizer industry will be featured during the annual convention of The National Fertilizer Association at The Greenbrier Hotel, White Sulphur Springs, West Virginia, June 14-16.

The diversified program will bring before the group outstanding authorities in the fields of business, industry, banking, education and government, as well as providing recreational opportunities for which this resort is famous.

"Agriculture Moves Toward Useful Abundance," is the subject of the opening address on Monday, June 14, by the Honorable Ezra Taft Benson, Secretary of Agriculture. Features of the Tuesday program are addresses by Louis Ware, NFA board chairman and President, International Minerals & Chemical Corporation, and the Honorable W. Sterling Cole, Congressman from New York and chairman of the Congressional Joint Committee on Atomic Energy. Congressman Cole will speak on "Putting the Atom to Work in Industry and Agriculture."

Two symposia, sponsored by NFA's Plant Food Research Committee, are scheduled for Wednesday morning, June 16, and will run concurrently beginning at 10:00 a.m. Of particular interest to engineering and plant operation personnel will be a discussion of the granulation process in the production of fertilizer. The other symposium, of special interest to management and sales personnel, will consider factors influencing the movement of fertilizer. Audience participation is invited in both symposia.

Appearing on the panel which will consider the question—"What Makes Fertilizer Move?"—are Harold R. Dinges, Director of Product Sales, Spencer Chemical Company; George E. Smith, Professor of Soils, University of Missouri, and O. E. Anderson, Secretary, Ohio



Louis Ware

Bankers Association. H. H. Tucker, President, Coke Oven Ammonia Research Bureau, will moderate the discussion.

Panel members who will discuss the granulation process are W. W. Coffin, Link-Belt Company; Robert J. Engelhardt, Project Engineer, John J. Harte Company; John O. Hardesty, Senior Chemist, Agricultural Research Service, U. S. Department of Agriculture, and L. D. Yates, Division of Chemical Development, Tennessee Valley Authority. Moderator of this discussion will be Edwin C. Kapusta, NFA's Chemical Engineer.

A business meeting will follow Mr. Cole's address on Tuesday morning. Meetings of the executive committee on Sunday evening, June 13, and of the Board of Directors Monday morning, June 14, will precede the official convention opening. Meetings also are scheduled of NFA's Plant Food Research, Public Relations, and Publications Committees.

The annual convention dinner Tuesday evening, to be followed by entertainment and dancing, will culminate a full program of recreation and special events. Featured entertainers include Ned Smith and June Sayer—"The Sweethearts of Song,"

and Raymond Chase, concertina virtuoso. Music will be furnished by the Meyer Davis orchestra. A refreshment hour through the courtesy of International Minerals & Chemical Corporation will precede the convention dinner.

Monday evening feature is a cabaret party with music and dancing. This will be preceded by cocktail parties given by American Potash & Chemical Corporation and H. J. Baker & Bro., and a reception by Southwest Potash Corporation. Special events for the ladies include a garden party Monday afternoon, and a bridge and canasta party Tuesday afternoon.

Golf and tennis tourneys are planned for both men and ladies along with a horseshoe pitching contest for men. Other recreation available to guests of the hotel includes horseback riding, badminton, archery, shuffleboard and quoits.

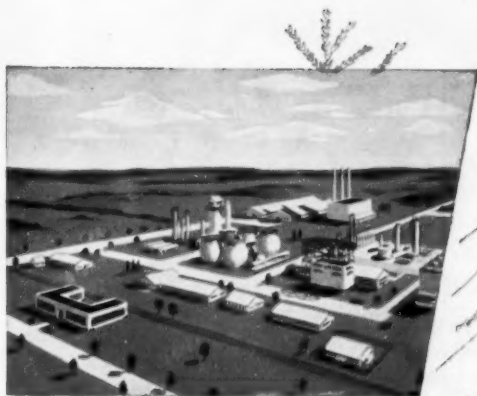
Attendance at this year's convention is expected to total around 700 including personnel of NFA member companies and their wives, guests of the Association, and press representatives.

Committees for NFA

LADIES' HOSPITALITY COMMITTEE: Chairman, Mrs. Louis Ware; Mrs. W. R. Allstetter; Mrs. Russell Coleman; Mrs. Dallas D. Culver; Mrs. J. W. Dean, Mrs. J. H. Epting; Mrs. R. D. Martenet; Mrs. Walter E. Meeken; Mrs. S. L. Nevins; Mrs. C. T. Prindeville; Mrs. A. F. Reed; Mrs. M. S. Rose; Mrs. A. A. Schultz; Mrs. Jack B. Snyder; Mrs. Fred Techter; Mrs. Henning Waltersdorph; Mrs. Thomas M. Ware; Mrs. W. N. Watmough, Jr.

MEN'S HOSPITALITY COMMITTEE: Chairman W. F. Price; T. L. Adcock; Horace M. Albright; B. W. Bellinger; Bennett E. Brown; William Caspari; Thomas W. Childs; N. Bryant Cooper; C. C. Crawford; W. A. Curry, Jr.; Leroy Donald; Victor A. Ericson; Ralph E. Fraser;

(Continued on page 90)



**from
this
growing
'plant'**

... A RICH HARVEST FOR AMERICA



This young plant is growing fast. It will begin to bear fruit this fall. And the nation's industry and agriculture will reap the harvest — a harvest of high quality nitrogen products that will contribute to increased comfort and convenience for us all.

This new plant, located in Memphis, Tennessee, is designed to produce 72,000 tons of nitrogen annually, in the form of urea and anhydrous ammonia. It represents a reliable new source for these important chemicals.

Already, urea and ammonia occupy strategic positions in American industrial production — for both civilian consumption and defense. Advancing technology will increase the demands upon the nation's supplies as new fibers, resins, petroleum derivatives, propellants and pharmaceuticals are created. In agriculture, too, more and more urea and ammonia will be needed each year to raise the capacity of our soils for sustained high-level crop production.

Watch this plant grow — and be ready to reap *your* share of the harvest. A free 20-page booklet "Introducing Grace Chemical Company" tells the story in detail. Write for your copy.



GRACE CHEMICAL COMPANY

HANOVER SQUARE • NEW YORK 5, NEW YORK

Know Your Costs

By WILSON T. SENEY
McKinsey & Company
Management Consultants

Know your cost facts before pricing, Mr. Seney recommends in this speech. He questions the wisdom of pricing on the basis of hunch unaided by sound cost accounting practices, and shows by example how to set up alternative courses of pricing action and how to forecast the profit results of each course of action. This talk was presented at the recent NAC convention. Its principles apply so well to the pesticide industry that we present it here in full.

The companies represented here are faced with many common problems. And on some of those problems, sound cost accounting practices are being of real help to quite a few of you, and can be of real help to all of you.

For instance, let's consider just one relatively well-defined problem involving the interplay of volume, costs, selling prices and profits.

In a period of weak market demand and corresponding downward pressure on prices, each of your companies is faced with a relatively clear-cut choice. Should you attempt to maintain volume by reducing prices, or should you maintain prices and reconcile yourself to some reduction of volume? Obviously, the answer to that question will have a direct and significant effect on your profits.

It is surprising how many people in these circumstances tend automatically to think in terms of cutting prices in order to maintain volume. Actually, in many cases, you may show better profits by maintaining prices and reducing volume. This statement, of course, is true only within limits. If volume is reduced enough, substantial losses can result. And this could happen if a single manufacturer held his prices constant while his competitors reduced their prices.

* - An address delivered before the Spring Meeting of the National Agricultural Chemicals Association, The Shamrock Hotel, Houston, Texas, March 26, 1954.

Nevertheless, we can agree, I think, that there is more than one side to the question: Should we maintain volume by cutting prices or should we maintain prices and

reduce volume? It is equally important to realize that sound cost accounting practices will enable you to investigate each individual situation in terms of the dollar effect on profits resulting from each course of action.

Example Of Profit Planning

In order to make clear by example what this means, let's take a look at a simplified profit projection for an agricultural chemicals manufacturer (Exhibit I). If you look at the relationship of material costs to sales income you will see that it is typical of the cost picture of a non-integrated producer. That is, the relative cost of materials in relation to sales indicates that this company is making pesticides from materials bought on the outside.

These figures could be changed to exemplify an integrated producer simply by reducing the relative cost of materials and correspondingly increasing the other elements of cost. Therefore, the comments I am about to make will apply to both integrated and nonintegrated companies, and will differ in their application only in degree.

This set of profit projections presents an original profit plan and two possible changes from the original profit plan. Of the two changes, the first reflects a reduction in sales volume of 10 percent, but no reduction from the originally planned selling price. The second variation reflects a volume unchanged from the original plan, but the selling price is reduced 10 percent from the originally planned selling price.

Now let's look at the most inter-

esting part—at the bottom, where it says "profit." This business can plan a profit before taxes of \$50,000 or \$35,000 or zero—depending on volume and price factors. The \$50,000 is based on originally planned volume and price. The \$35,000 is based on a reduction of 10 percent in volume with selling price held constant. The zero profit is based on originally planned volume, but reducing selling price 10 percent.

Looking at "Income from Sales," we note that the original plan calls for \$500,000. At 10 percent change in **either volume or price** will of course result in a reduction of sales income to the \$450,000 shown.

Looking next at costs, you will notice that they are divided into variable costs and fixed costs. Variable costs increase or decrease directly with the volume of production and sales. Please notice that materials and supplies, variable labor, variable power, and packages change in this example as volume changes. When volume drops 10 percent from \$500,000 to \$450,000, then total variable costs also drop 10 percent from \$330,000 to \$297,000.

Fixed costs include supervision, selling expenses, fixed portions of labor and power, and the overhead represented by office expenses, local taxes and insurance, and depreciation. Fixed costs are those costs for which you are more or less committed, regardless of the volume of sales or production. In this example, the total of fixed costs remains at \$100,000 regardless of volume or selling price changes.

Now let's go back and put sales and costs together to arrive at profits. If we read down the column headed "Items of Income and Cost," we find that sales income less freight and less variable costs equals marginal return. In the original plan, \$500,000 sales income less \$20,000 freight, less \$330,000 variable costs results in a marginal return of \$150,000.

Fixed costs of \$100,000 are subtracted from the marginal return to arrive at a profit before taxes of \$50,000. Assuming normal tax rates, this leaves a profit after taxes of \$29,500.

Alternative Courses Of Action

Now let's suppose that some time after the original plan has been prepared, economic conditions and market demands change. There is a downward pressure on prices, and there is no strong demand for the product. The producer is faced with a choice of holding his selling price constant and reducing volume or of reducing selling price and maintaining volume. The planned profit results of these alternative courses of action are quickly spelled out.

If price is held constant, and a 10 percent loss in volume is incurred, sales income is reduced 10 percent to \$450,000. Variable costs are likewise reduced 10 percent, so that freight is only \$18,000 instead of \$20,000. Similarly, the plant variable costs become \$297,000. This results in a marginal return of \$135,000. In other words, sales income is down \$50,000, but this is offset by a reduction of \$35,000 in variable costs; so that the net reduction in marginal return is only \$15,000. The fixed costs subtracted from marginal return remain the same, so that the net reduction in profit before taxes is also \$15,000. Thus we forecast that a reduction in volume of 10 percent at a constant selling price results in a reduction of profit before taxes of \$15,000 or after taxes of \$7,200.

Now let's look at the planned profit results of the alternative of reducing selling price 10 percent and holding volume constant. Again, income from sales is \$450,000. However, there is no reduction in variable costs, because there has been no reduction in volume. Therefore, freight and variable plant costs remain as they were in the original plan, and that is \$20,000 and \$330,000 respectively. Marginal return now becomes \$100,000. Since marginal return and fixed cost are now equal to each other, profit before

taxes is zero. Thus, if this second alternative is followed, reduction in profit before taxes is a full \$50,000.

Probably the conclusions to be drawn from this example are not new to most of you. There is nothing startling in the news that lower price or lower volume frequently means lower profits. However, even when "everybody knows the answer," it is often difficult to get the proper dollar signs on these answers which "everybody knows." The significant thing about this example to me is that specific alternatives can be quickly measured in

specific dollar terms. This is something that cannot be done in many accounting systems.

Sound Cost Accounting For Profit Planning

What sort of cost accounting practices are best suited for answering this and other profit planning problems? There are three guides to sound accounting for profit planning:

1. Keep your reports and records simple and easily understandable.
2. Keep all your cost facts, including the ones you cannot see easily.

(Continued on page 83)

EASING THE COST SQUEEZE

From USDA's "Agricultural Research"

How can a farmer help himself in today's dilemma of higher production costs and lower prices for the crop he grows?

Following recommended cultural practices can supply part of the answer, according to the results of field tests carried on in Michigan.

Cooperating agricultural economists and soil scientists of ARS and the Michigan experiment station studied production costs (based on 1953 prices) of five important crops. Some were grown under what were observed to be current practices, some under recommended practices. Findings are summarized in the table below.

Farmers were spending more per acre to follow recommended practices, the scientists found, but bigger yields more than offset this additional expense. Take wheat, for example. Under current production methods, it cost \$40.05 to grow 28 bushels per acre. But recommended practices, which cost \$60.05 an acre, boosted yields to 47 bushels.









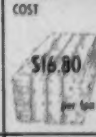

Practices that cut production costs were such familiar items as adequate fertilization and timely planting of treated seed of the right variety on adapted, properly drained soils. Correct rotation, tillage and weed control also were important.

Adequate fertilization was frequently the most expensive improvement—but it was generally more effective in reducing production costs than any other single practice.

Michigan farmers currently apply an average of 55 pounds of fertilizer, or about \$1.65 worth, to each acre of alfalfa-brome grass hay they grow. The recommended fertilizer rate for this crop is 200 pounds, or \$6 worth, per acre. If farmers did no more than increase fertilizer use to recommended levels—otherwise going along with current production methods—this one change would cut the cost of producing a ton of alfalfa-brome hay from \$16.80 to \$15.28.

When fertilizer rates were kept the same (55 pounds per acre) but other practices were improved over current methods, hay production costs were trimmed from \$16.80 to \$14.25 a ton. Fertilization at the 200-pound rate—along with the other improved practices—lowered costs from \$15.28 to a low of \$13.30 a ton.

The tests emphasized that although production costs can be cut by improving any one cultural practice, the biggest savings come from applying all the recommended methods.

RAISING					
	WHEAT	OATS	CORN	ALFALFA-BROME	SUGAR BEETS
BY CURRENT METHODS	 COST \$1.54 per bushel	 COST \$0.90 per bushel	 COST \$1.21 per bushel	 COST \$16.80 per ton	 COST \$11.21 per ton
BY RECOMMENDED METHODS	 COST \$1.28 per bushel	 COST \$0.69 per bushel	 COST \$1.02 per bushel	 COST \$13.30 per ton	 COST \$8.19 per ton

A relatively new technique—a flannelboard—is being used with considerable success to develop a reaction point-by-point in discussion of soil chemistry. The author of the method is Proctor Gull, manager of the agronomy section of Spencer Chemical in Kansas City.

The flannelboard, Mr. Gull says, helps an audience follow chemical reaction in the soil. He uses it in explanations of the clay particle, base exchange, plant nutrition and in a step-by-step description as a plant takes up nutrients.

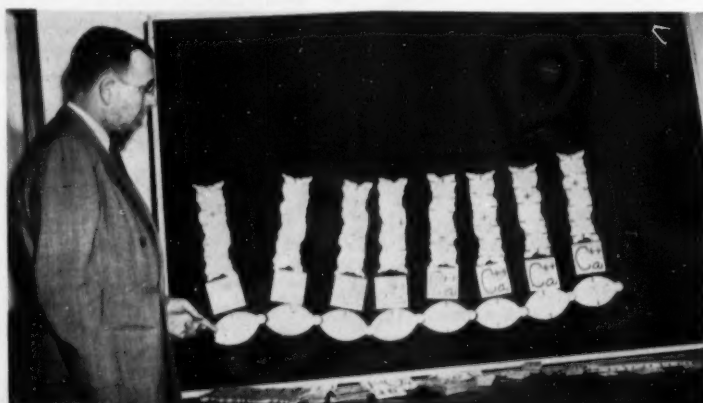
The technique was first used at an "agronomy school" held recently in the Spencer District Sales Office in Chicago. Members of the Spencer sales staff in that district and the general offices in Kansas City attended.

Mr. Gull expects the flannelboard method to be expanded considerably in this direction as time goes on. In recent weeks several Midwest agricultural colleges which have observed Mr. Gull's flannelboard device has adopted the technique for their own meetings and for classroom purposes.

1. Soil conditioners are either natural or synthetic chain compounds with negative charges. Clay particles are held by their negative charges to di-valent cations. Mr. Gull points to a soil

conditioner particle. 2. Mono-valent cations break the double bond bridges between clay particles and soil conditioner, resulting in deflocculated soil. 3. Mineral soils contain several types of clay minerals. This illustrates two extreme types. The one in the right hand is commonly found in the South, the one in the left hand in the northern U.S. They are commonly called kaolinite and montmorillonite, respectively. 4. The clay mineral is the storehouse, or shipping and receiving room, for plant nutrients. The plant root trades hydrogen for cations or nutrients. The root obtains hydrogen from the partial oxidation of sugars. Sugars are transferred from the seed or leaf where stored or synthesized. 5. Three molecules of rock phosphate. 6. He adds sulfuric acid to rock. 7. The rock treated with sulfuric acid gives gypsum and mono-calcium phosphate. (Calcium fluoride molecules come off at the right.) 8. Then, 2% ammoniation produces mono-ammonium phosphate, di-calcium phosphate and gypsum. 9. Ammoniating superphosphate, increasing the ammoniation rate to 4¼%, gives ammonium sulphate, calcium sulphate and di-calcium phosphate. 10. With 7% ammoniation of superphosphate, the reaction produces ammonium sulphate and precipitated tri-calcium phosphate. Precipitated tri-calcium phosphate is about 90% citrate soluble.

FLANNELBOARD DEMONSTRATES SOIL CHEMISTRY



THE PRODUCTIVE CAPACITY OF WATER

by DR. A. DEMOLON

Here is another of the papers from overseas which has been supplied us by Dr. Vincent Sauchelli, Davison Chemical Division. Says Dr. Sauchelli: "The author is internationally known as an outstanding soil scientist, who has approved the translation from the French for publication in the U.S. The article should create interest among your readers."

Is it possible to classify soils according to their productive capacity on a basis derived from the soil itself? Such an objective answers a double purpose: (a) to delineate the margin of possible improvement in crop response; (b) to introduce a direct measurement for determining the value of soils. Consideration of the pedologic assumptions associated with cultural experimentation makes such an end result possible.

* * *

For a given plant the maximal level of dry matter production is attained when all the growth factors act simultaneously and constantly at their optimum during the course of the various cycles of growth. That absolute maximum may be developed in the laboratory but is unknown to us; its interest for us is purely theoretical because the precedent conditions are never realized in practical agriculture. On the other hand it is possible to propose a determination of the "attainable maximum" for a given soil.

For a long period of time this fundamental property has been qualitatively appreciated under the designation "fertility." Recently, several attempts have been made to evaluate it on positive bases. In Holland, Edelman (2) taking the pedologic profile as a base was able to establish a classification of soils that is destined to have a much better utilization, thanks to the fact that they are using crops best

adapted to these soils. In Belgium, de Leenher (3) adopted a type of determination of the agricultural value in relation to the kinds of soil of one and the same region: by measuring the crop of very small plots of different pedologic nature, but belonging to a part of the same larger area, the other factors (labor, manure, cultural system) remaining identical. This application of pedologic relationships to agriculture furnishes useful guides or leads; but it does not give us directly the correlations existing between certain characters of the profile and the yields: it limits itself merely to recording a stage of a fact considered as unchangeable.

If, on the other hand, one should modify various factors which play a preponderant role, asymptotic curves are obtained which make it possible to define an accessible maximum for a given plant, soil and cultural system. In this regard experience shows that two elements should command closest attention, namely, water and nitrogen.

1. The importance of water appears evident when the harvests obtained in wet years are compared with those of dry years on different soil types. A sandy soil gives small yields, but if it is well supplied with water and mineral fertilizers it can give fairly high yields.

In the case of excess moisture, resulting in the impermeability of the subsoil, it is not possible to get

satisfactory yields without proper drainage. When the rainfall is badly distributed, the capacity of the soil to retain moisture and the constitution of its profile will determine the yield. For example, the reserves accumulated by a loam soil to a depth of 1.25 meters will not exceed 200 mm. of utilizable water. This amount, barely enough for cereal crops, cannot satisfy more exacting crops such as beets, pasture crops or vegetables.

Admitting that under our climate (France) soils return to saturation during the winter period, their moisture status during the summer shows a deficit more or less important, depending on their constitution in relation to their optimum whence a degree of their productivity is realized generally between 30 and 80 per cent of the attainable maximum. Such is the most frequent cause of its variation in yields whose highest point, rarely attained, rises under the Parisian climate, to about 10 to 12 tons of dry matter per hectare. Under irrigation practices, this level may go to 15 tons for alfalfa in the Mediterranean region, and to more than 20 tons for sugar cane under a tropical climate.

It can be said definitely that the utilization of water depends strictly on the pedologic profile of the soil. This also determines the methods of application and the efficacy of the techniques used for correcting the moisture condition: dry farming, irrigation and drainage.

2. If the utilizable water fixes the plateau of productivity, to reach such, it is necessary, among other things, to bring all the nutritive elements to their optimum level by means of applied chemical fertilizers. In this regard it is essential to put nitrogen right up in the first rank of importance for these reasons:

(1) The law of growth action of nitrogen shows that it is the element whose efficacy is the highest, that is to say, it is that which for the same weight, assures the highest relative increase of yields.

(2) Nitrogen is almost always in the minimum in cultivated soils; the

limit at which it may be applied, variable with the kind of crop plant, determines the attainable maximum.

Chemical analysis does not give us much help in this regard, but merely some indications or guides, therefore, it follows that it is necessary to have recourse to direct experimentation involving increments of nutrient nitrogen. The yield curve as a function of the applied nitrogen shows a maximum variant of 30 to 125 kg. depending on the crop. However, it is necessary to keep the other essential nutrient elements close to their maximal efficacy, which is facilitated by studies made in the laboratory. It is, however, the soil properties which determine the possibilities of storage, assimilability, and definitely, the efficiency of the nutritive elements present in the medium or applied in the form of chemical fertilizers.

We can, therefore, state the principle as follows: The productive capacity of a soil depends essentially on its profile, but it does not attain its maximum unless the reserves of nutritive elements have been adjusted correctly as a function of those properties and of the needs of the plant.

That capacity cannot be determined in a satisfactory manner by means of inquests and statistics: it requires the combination of a pedologic study and cultural experimentation carried on in an adequate fashion.

Such a program carries an obvious practical interest. It permits one to determine the increases that are possible in the production of diverse cultures starting from their actual level, in a measure determined by the improvement which is appropriate to the cultural techniques. The conclusions can be extended to areas which are comparable in all respects, that is, to soils of the same type in one and the same region.

(3) Such a work method will lead to norms of greater precision than those now available to us for fixing the value of soils and of agricultural policies. For example, by such

means we can more or less determine for any given region the maximal gross agricultural production or assure the feeding of the largest number of persons. This also leads us to consider "the nourishment capacity of a soil": to this end attention would be focussed more on the nutritive value rather than on the bulk of the crop.

Here are some examples tabulated to show the greater superiority of root crops over grains for the same soil surface area:

Soils capable of assuring a good production of these crops have therefore a nutrition producing capacity greater than others. With good cultural practices 0.1 hectare, on an average, in wheat and potatoes furnish daily 3000 calories per head, or say, 0.4 kg from bread and 2.5 kg from potatoes. As to production of proteins, because of the required 100 gms. of meat per day, about 0.1 hectare of ground would be needed, but a much larger surface area in the cases of neglected, extensive types of operation which are most frequent. Production in France could therefore exceed by much the alimentary requirements of the country since we have available 0.5 hectare of arable land and 0.25 hectare of meadow land per person; therefore, intensified production should be considered above all from the economic point of view.

In the world as a whole, the soils which are actually productive are estimated at about 1,600 million hectares for 2.2 billion inhabitants, hence the average per capitum is 0.72 hectare which area could assure a level of nourishment more than sufficient if yields could be kept more on the high side. It seems, therefore, that before think-

ing about increases of surface areas we should raise the yields of crops by taking advantage of all those technical resources at our disposal which are adapted to the properties of the various types of soil.

LETTERS TO THE EDITOR

PURDUE UNIVERSITY
AGRICULTURAL EXPERIMENT
STATION
Lafayette, Indiana
April 30, 1954

Congratulations on giving Pakistan separate billing in the section on "Around the Map"; but why not give it equal billing to other countries such as Iran and India? Pakistan is the fifth largest country in the world population-wise, it is the newest large country in the world community of nations, and it is the largest Moslem state in the world. This ought to give it equal rank to any country.

Very truly yours,
A. J. Ohlrogge
F.A.O.
former Soil Fertility Advisor
to the Government of Pakistan

THE CONNECTICUT
AGRICULTURAL
EXPERIMENT STATION
NEW HAVEN, CONN.
April 22, 1954

Thank you for sending me a clipping of your editorial in a recent issue of the "Commercial Fertilizer" relative to our Agronomy Society study on use of agronomists during World War II. It seems that bringing information of this kind to the attention of the public should be useful and informative. May I express the appreciation of the American Society of Agronomy for your publishing this article.

Sincerely yours,
C. Loyal W. Swanson, Head
Department of Soils

	Yield q./ha	Calories of energy/Hectare 1000 calories	Utilizable energies/ha 1000 calories	Calories available per day and for 0.1 Hectare	Protein matter grams Per day and Per 0.1 Hectare
Wheat	30	9,000	7,500	2,000	80
Potatoes	180	17,000	15,000	4,000	60
Beets					
(Sugar)	300	24,000	18,000 ⁽¹⁾	5,000	—
Beans	18	6,000	—	1,700	120
Meadow (Hay)	50	11,000	3,600	400	100 (meat)

⁽¹⁾ per 4500 kg of sugar

Note q./ha = quintals per hectare: 1 quintal (metric) = 220.47 English lbs.

Stock Holders Approve Grace-Davison Merger

Stockholders of W. R. Grace & Co. international industrial and trading concern, May 12 approved the proposed merger of The Davison Chemical Corporation with and into W. R. Grace & Co.

The stockholders also authorized the issuance of up to 635,499 additional shares of the common stock of W. R. Grace & Co. to be used to carry out the merger agreement.

The boards of directors of Grace and Davison approved the merger agreement on April 22 and recommended it for favorable consideration by the stockholders.

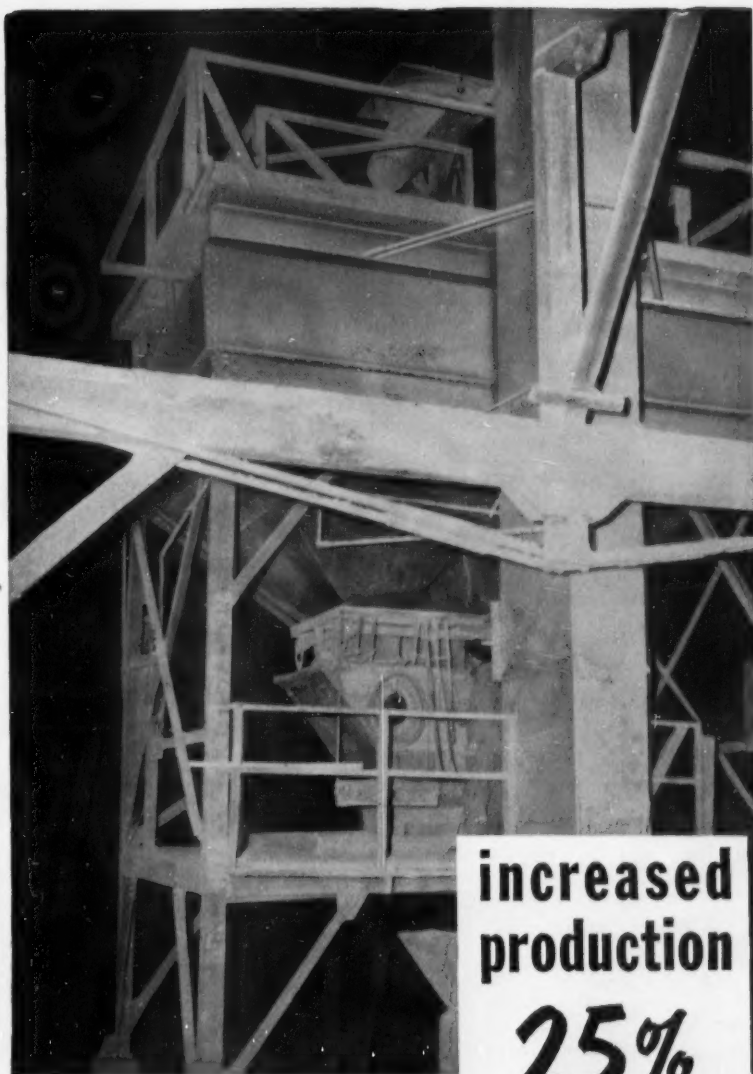
Stockholders of The Davison Chemical Corporation May 13 approved the merger.

It was announced that Davison will operate as Davison Chemical Company Division of W. R. Grace & Co., and that headquarters of the division will be maintained in Baltimore.

The present board of directors of Davison will continue as members of an advisory board of the Davison Division, and present officers of the company will continue in corresponding posts of the new division of Grace. The officers will be: Chester F. Hockley, chairman of the advisory board; M. G. Geiger, vice-chairman of the advisory board and president; P. W. Bachman, vice-president; D. N. Hauseman, vice-president; W. B. McCloskey, vice-president; M. C. Roop, vice-president and secretary; C. E. Waring, vice-president; W. N. Watmough, Jr., vice-president; J. S. Marks, treasurer; F. J. Griffin, controller, F. Z. Oles, assistant controller; and R. S. Clark, assistant secretary.

It is expected that sometime after the merger the Grace management will recommend that the Board of Directors of W. R. Grace & Co. be increased and that C. F. Hockley, chairman of the board of Davison and M. G. Geiger, president of Davison, will be invited to become members of such enlarged Board of Directors.

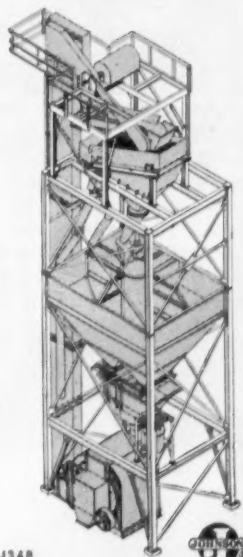
June, 1954



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25%

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are successfully solving the problem of "more production — less cost" for many fertilizer manufacturers. One typical Johnson plant owner reports a production increase of 25% — and showed a substantial saving in manpower. As a result, this same fertilizer firm has modernized a second plant with Johnson elevator, bin and batching equipment. With this mechanical method, materials are elevated, pulverized, screened, weigh-batched and blended to exact specifications — all in one continuous cycle. Operation is fully-automatic or can be manually controlled. Check the savings possible in your plants. Whether you are interested in complete plants, or need auxiliary equipment, call your Johnson distributor, or write to us.



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Southeastern TURF CONFERENCE



1. Prominent in the first day's activities of the Eighth Annual Turf Grass Management Conference were: Glenn W. Burton, principal geneticist, USDA, Experiment Station, Tifton; M. K. Jeffords, Jr., vice-president, Southern Golf Association, Orangeburg, S. C.; Tom M. Cordell, dean, Abraham Baldwin Agricultural College, Tifton. 2. First speaker on the second day of the

program was B. P. Robinson, southeastern director, Green Section, U. S. Golf Association, and turf specialist, Georgia Coastal Plain Experiment Station, Tifton. 3. Even after the meetings were in progress, the registration desk was a busy place as latecomers from far-away places continued to arrive.

With attendance exceeding 140 delegates from 13 states, the Eighth Annual Southeastern Turf Grass Management Conference was held at Abraham Baldwin Agricultural College and Georgia Coastal Plain Experiment Station in Tifton, Ga., on April 20-21.

A well-rounded program on grass development, care, and problems was presented to those who attended the sessions. The group included golf course and athletic field managers, park and cemetery supervisors, military and commercial airport superintendents, and others interested in development and care of turf grasses.

The program featured the following agricultural specialists and the subjects they presented: Factors Limiting the Growth of Turf Grasses—Glenn W. Burton, Principal Geneticist, U. S. D. A., Tifton, Ga.; Moisture control in Turf Soils—Vernon C. Jamison, Soil Scientist, Soil and Water Conservation Research, USDA, Auburn, Ala.; Diagnosing Turf Production Problems—O. J. Noer, Agronomist, Milwaukee, Wis.; Insect Control in Turf—Gene C. Nutter, Asst. Agronomist (Turf), Univ. of Florida, Gainesville; Effects of Soil Reaction and Nitrogen

An interesting article, "Coastal Bermuda Grass for Hay, Pasture, or Silage" by Glenn W. Burton, Principal Geneticist, Field Crops Research Branch, USDA and Georgia Coastal Plain Experiment Station, Tifton, Ga., appeared in American Plant Food Council Journal, Jan-Feb-Mar. 1954 issue.

Levels on Turf Grasses—B. P. Robinson, Southeastern Director, U.S.-G.A. Green Section, Tifton, Ga.; Pythium and Its Control—Homer D. Wells, Plant Pathologist, USDA, Tifton; Nematodes—another Turf Problem—J. M. Machmer, Nematologist, USDA, Tifton; Zoysia Grass Turf Types—Ian Forbes, Jr., Research Agronomist, USDA, Tifton.

Since 1936, the USDA in cooperation with the Georgia Coastal Plain Experiment Station has been conducting at Tifton, an extensive grass breeding research program designed to solve some of the southeastern pasture problems. Some of the findings of this research have been applicable to turf problems, but most of them have not. Beginning in the

fall of 1946, a cooperative turf research program was begun at Tifton under the stimulus of Dr. F. V. Grau.

More people in the southeastern United States are concerned with grass for turf than any other agricultural crop. Every home owner is faced with the problem of establishing and maintaining lawns under a tremendous range of environmental conditions. Good turf on the golf course, playground, and athletic field adds to the enjoyment and health of the thousands of people who use them. People who seek relaxation and recreation in our many parks expect to find good turf there. Even the football fan gets more enjoyment from a game played on a field sodded in good turf. Most of us are asking that turf be used to cover our final resting place and keepers of cemeteries are faced with turf problems. Nothing so economically and effectively stabilizes road shoulders as turf. Many an automobile accident might have been averted had the road shoulders been well sodded with turf. Every air-minded person from the farmer who keeps a private plane to the people who ride the commercial airlines are interested in finding low cost

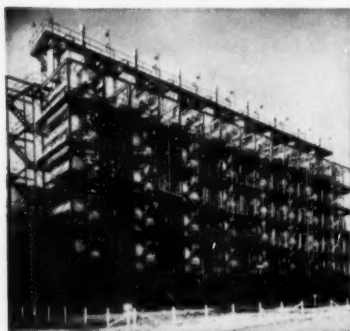


This huge plant at Decatur, Alabama, is where Tennessee Valley Co-op Fertilizers are manufactured. Operating since 1937, Tennessee Valley now distributes recommended grades of mixed fertilizer through 16 farmer cooperatives in Alabama. Annual production capacity 45,000 tons.



E. P. Garrett is General Manager of the Tennessee Valley plant. Assistant manager is E. L. Morgan.

Tennessee Valley Co-Operatives ... Another Spensol User



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Spencer means service and good service has made SPENSOL Solutions a favorite with scores of nationally known mixers.



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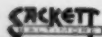


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turf to furnish runways or covers for the airports. Military demands for turf are tremendous.

To give an idea of the expanding need for better turf for golf courses alone, the National Golf Foundation reported at its annual spring meeting in New York City last month that 53 new golf courses were opened in 1953, 109 were under construction and 225 were in the planning stage. In the first 3 months of 1954, courses under construction increased 52% to 166 and those in the planning stage totaled 357, an increase of 58%. During this period 11 new golf courses were opened in the southern states.

Present expansion of golf facilities in America shows every sign of healthy, permanent growth, brought about by the steadily increasing pressure of new golfers looking for places to play the game. As a result, interest in golf facilities is steadily increasing on the part of municipalities all over the country. (Many communities learn from the experience of their recreation-conscious neighbors that a golf course is one of the very few recreation facilities which can be self-sustaining).

Several of the courses under construction and being planned this year are school-sponsored, notably at the Universities of Iowa, Florida, Maryland, Indiana and Wisconsin. And further, industry, with 73 company-sponsored golf courses already in operation, is adding to the list; outstanding among the additions is the beautiful 36 hole employee golf course opened on Memorial Day this year in Dayton, Ohio by the National Cash Register Co. Military installations to begin construction of golf courses within 90 days include Ellsworth Air Force Base in Rapid City, South Dakota; Mountain Home AFB in Idaho; Ofutt AFB in Omaha, Nebr., and Air Force base in Austin, Texas; another in Roswell, New Mexico and at Fort Eustis, Va. (These military golf courses will be built solely with welfare funds rather than tax monies.)

No field of agricultural research has been so completely neglected as the field of turf research. Con-

fronted daily with a multitude of turf problems for which we have no definite solution, research can provide answers for most of these questions. Better strains and varieties of turf grasses are needed and grass breeding research can develop them. Turf research offers the best route to better turf.



I. S. Avery Smith, president of Independent Guano Corp. at Greenville, S. C. with Mrs. Smith and their son, Avery II, both of whom came into the office on the Saturday afternoon we were visiting Independent. Avery originally came from Anderson County, and joined the company 30 years ago. Avery spends his spare time engaged in his favorite hobby, farming. The Smiths have three children. Their elder son studied chemistry at Clemson College; after graduating he went into the Army, and is now stationed at Joliet, Ill. Younger son, Avery II, is in his sophomore year at Clemson, studying agriculture. Daughter Susanne is a freshman at Winthrop College in Rock Hill, S. C. A. H. Watts, Virginia-Carolina Chemical Corp. plant manager at Greenville, S. C., is an old timer in the industry. "Andy," as his friends in the Greenville Lions Club call him, came with V-C in his native Durham, N. C., in February, 1909 as a bag printer; he has been with them ever since, excepting a two-year leave for military service during World War I. From Durham he was transferred to Charlotte, where he worked for 25 years before coming to Greenville nine years ago. The move to Greenville was a homecoming for Mrs. Watts, whose home was originally in that city. An active worker in the Red Cross through two world wars and now vice-chairman of the Greenville chapter, Mrs. Watts had her efforts recognized several years ago through a nice article in V-C News, the company's employee publication. The Watts have one son who is married and works for the telephone company in Greenville.

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Architects and Manufacturing Engineers to the Fertilizer Industry since 1897

Table 1. - Consumption of Fertilizers, Year Ended June 30, 1953^{1/}

State & Region	Mixtures			Materials ^{2/}			All Fertilizers 1952-53	Relative Consumption 1951-52 = 100	
	July 1 - Dec. 31, 1952	Jan. 1 - June 30, 1953	Total	July 1 - Dec. 31, 1952	Jan. 1 - June 30, 1953	Total		Fertilizers ^{3/}	Total N, Avail. P ₂ O ₅ & K ₂ O
	Tons	Tons	Tons	Tons	Tons	Tons		Percent	Percent
Maine	25,685	175,762	201,447	2,965	7,073	10,038	211,485	99	101
New Hampshire	1,897	13,404	15,301	988	5,166	6,154	21,455	102	110
Vermont	11,197	24,251	35,448	7,444	6,881	14,325	49,773	89	91
Massachusetts	9,646	58,446	68,092	4,949	12,332	17,281	86,373	93	94
Rhode Island	1,366	11,989	13,354	830	1,627	2,457	16,811	93	93
Connecticut	4,900	55,024	59,924	4,064	23,680	27,744	87,668	100	101
New England	54,690	338,876	393,566	20,940	56,759	77,699	471,265	97	99
New York	118,413	399,107	517,520	49,698	92,325	142,023	659,543	104	106
New Jersey	56,751	192,747	249,498	8,441	19,487	27,928	277,426	105	106
Pennsylvania	164,675	443,588	608,263	27,201	61,380	88,581	697,344	105	108
Delaware	16,067	69,633	85,699	940	4,264	5,194	90,684	113	120
District of Columbia	586	1,381	1,967	174	446	620	2,687	102	103
Maryland	76,461	204,660	281,121	7,973	14,601	22,574	303,686	102	106
West Virginia	14,742	55,353	70,095	4,334	12,246	17,580	87,277	87	89
Middle Atlantic	447,585	1,366,459	1,814,044	99,961	204,741	304,702	2,118,746	104	107
Virginia	173,786	564,647	738,433	26,625	88,375	115,000	853,433	97	100
North Carolina	223,771	1,303,761	1,527,532	77,774	296,344	374,118	1,901,640	98	99
South Carolina	115,665	595,039	710,704	54,041	211,196	265,237	975,931	100	100
Georgia	207,896	916,672	1,124,568	68,106	194,291	262,397	1,386,965	106	110
Florida	408,390	643,564	1,051,954	50,735	61,817	112,552	1,154,506	108	111
South Atlantic	1,129,498	4,022,673	5,152,171	277,281	842,023	1,119,304	6,271,475	102	104
Ohio	372,711	711,113	1,083,824	29,659	60,718	90,377	1,174,201	112	115
Indiana	267,268	768,179	1,035,447	57,036	123,310	180,346	1,205,793	111	118
Illinois	172,369	472,323	644,692	503,906	604,569	1,008,474	1,653,166	115	128
Michigan	198,953	384,491	583,444	16,807	47,726	64,532	647,976	110	114
Wisconsin	58,872	318,717	377,589	12,897	26,980	41,877	419,466	106	109
East North Central	1,060,173	2,654,823	3,714,996	620,304	765,302	1,385,606	5,000,602	112	118
Minnesota	30,170	176,677	206,847	17,222	43,640	60,862	267,709	119	120
Iowa	60,314	316,232	376,546	59,212	124,706	183,918	560,464	129	140
Missouri	156,229	312,642	468,871	170,675	194,246	364,921	833,694	111	116
North Dakota	4,260	14,704	18,964	8,643	14,988	23,631	40,495	129	138
South Dakota	693	7,128	7,821	2,134	6,668	8,802	16,623	147	175
Nebraska	11,294	38,145	49,439	30,223	66,250	96,473	145,902	154	161
Kansas	69,618	40,933	110,551	82,770	46,108	128,878	259,629	115	132
West North Central	322,768	906,461	1,229,229	368,679	486,608	855,287	2,094,516	120	130
Kentucky	81,710	376,870	458,580	54,472	101,147	155,619	614,199	97	103
Tennessee	85,230	332,379	417,609	60,200	102,102	162,302	579,911	96	100
Alabama	112,826	733,699	846,524	180,672	230,900	411,572	1,256,497	94	94
Mississippi	18,396	317,325	335,721	193,768	207,145	400,913	736,634	89	92
East South Central	258,161	1,760,473	2,018,634	489,313	641,294	1,130,607	3,189,241	94	96
Arkansas	21,690	176,374	198,064	49,677	119,425	169,102	366,066	102	109
Louisiana	31,717	146,414	180,131	54,599	84,123	138,722	318,853	96	99
Oklahoma	19,846	40,594	60,440	52,606	33,889	86,495	146,936	85	100
Texas	62,326	220,873	283,199	141,100	146,206	287,306	570,505	93	99
West South Central	135,479	685,255	820,734	297,982	383,643	681,625	1,402,369	95	102
Montana	720	3,199	3,919	6,847	15,267	22,104	26,023	112	113
Idaho	493	13,942	14,435	15,324	44,332	59,656	74,091	101	100
Wyoming	331	2,684	3,015	1,681	7,148	8,829	11,844	172	174
Colorado	3,216	15,653	18,869	6,690	20,992	27,682	46,560	102	98
New Mexico	782	1,767	2,549	8,846	16,396	25,242	27,791	144	160
Arizona	5,376	16,126	21,502	32,934	74,313	107,247	131,749	109	112
Utah	640	2,673	3,313	7,210	21,440	28,650	31,963	104	103
Nevada	154	566	710	2,780	7,533	10,313	11,023	123	132
Mountain	12,711	58,600	71,311	84,312	207,411	291,723	365,034	110	111
Washington	5,897	24,348	30,245	35,745	58,384	94,129	124,374	134	142
Oregon	3,139	16,291	19,430	56,199	72,340	128,539	147,969	126	122
California	86,801	163,791	249,592	670,624	631,318	1,301,942	1,751,744	104	105
Pacific	94,837	204,430	299,267	762,778	962,042	1,724,820	2,024,087	109	111
Continental U. S.	3,555,902	11,898,050	15,453,952	3,021,650	4,559,823	7,581,373	23,036,325	104	108
Hawaii	29,077	29,356	58,433	34,079	36,820	70,899	129,332	112	114
Puerto Rico	102,361	107,322	209,703	12,362	25,233	37,595	247,296	94	93
Alaska	0	136	136	0	517	517	653	116	116
Territories	131,458	136,814	268,272	46,441	62,570	109,011	377,283	99	100
Total U. S.									
1952-53	3,687,360	12,034,864	15,722,224	3,067,991	4,622,393	7,690,384	23,412,608	104	109
1951-52	3,533,404	11,552,946	15,086,349	2,856,968	4,469,111	7,326,079	22,432,418	100	100
1950-51	3,384,456	10,593,926	13,978,382	2,940,994	4,072,018	7,013,012	20,991,394	94	91

^{1/} Includes: Ground phosphate rock, basic slag, secondary and trace element materials, such as, borax, sulfur, manganese sulfate, etc., used as separate materials, also fertilizers distributed by Government agencies. Does not include liming materials, but includes gypsum.

^{2/} Excludes the quantities of materials used for manufacture of commercial mixtures.

^{3/} Fertilizers which were guaranteed to contain primary plant nutrients (N, P₂O₅, K₂O).

USDA REPORT: FERTILIZER CONSUMED YEAR ENDING JUNE 30, 1953

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Consumption of commercial fertilizers in the United States, including the Territories (Hawaii, Puerto Rico, Alaska) for the year ended June 30, 1953, amounted to 23,412,608 tons. This quantity represents an increase of 4.4 percent or 980,190 tons more than the 22,432,418 tons consumed in the 1951-52 season. In 1952-53, of the total consumed, 15,722,224 tons were commercial mixtures, 6,812,897 tons were separate materials containing primary nutrients (N, P_2O_5 , K_2O), and 877,487 tons were secondary and trace element materials having no primary nutrients. The consumption of these classes of fertilizers were 4.2 percent, or 635,875 tons; 3.8 percent, or 251,878 tons; and 11.8 percent, or 92,437 tons more than the corresponding classes for the 1951-52 season.

Fertilizers consumed in 1952-53 contained a total of 5,648,016 tons of primary nutrients. This is 445,031 tons (8.6 percent) more than the revised total of 5,203,003 tons consumed in 1951-52. Fertilizers consumed in 1952-53 contained 1,637,056 tons of nitrogen, 2,270,750 tons of available P_2O_5 , and 1,740,210 tons of K_2O . These quantities represented a net increase for nitrogen of 214,896 tons (15.1 percent), for available P_2O_5 71,374 tons (3.2 percent), and for K_2O 158,743 tons (10.0 percent) over 1951-52. The total content of P_2O_5 in all fertilizers consumed was 2,767,990 tons. The weighted average total primary nutrient content in all commercial mixtures consumed in 1952-53 was 25.85 percent as compared with 24.86 percent in 1951-52. For all fertilizers containing primary nutrients, it was 25.06 percent in 1952-53 as compared with 24.04 percent in 1951-52.

The tabulations presented herein were prepared from reports submitted by manufacturers to the Fertilizer and Agricultural Lime Section, showing the number of tons of fertilizer shipments for consumption in agriculture throughout the forty-eight States and the Territories. Supplementary information was furnished by the State fertilizer control officials and agronomists. All of this assistance is gratefully acknowledged. The word "ton" means the short ton of 2,000 pounds.

CONSUMPTION

The total consumption of the two principal classes of fertilizers, mixtures and materials, is summarized by States and regions in Table I. Although the use of fertilizers in 1952-53 for the United States as a whole showed a net gain of 4.4 percent over 1951-52, consumption in fourteen States and Puerto Rico were from one to 15 percent below 1951-52. In most of the States of the

New England and South Central regions, consumption of fertilizers was below the level established in 1951-52 for both mixtures and materials. In Kentucky and Tennessee, however, consumption of materials was higher than in 1951-52, while in Louisiana consumption of mixtures was higher. The total consumption for these States, nevertheless, was below that of 1951-52. Total consumption in three States of these regions, Arkansas, Connecticut, and New Hampshire was equal to or above their consumption in 1951-52.

The percentage increases in consumption averaged highest in the West North Central region, followed by the East North Central, Mountain, and Pacific regions, in the order named. Consumption of primary nutrient fertilizers in States of these regions rose from one to 72 percent with average increases for these regions of 20, 12, 10 and 9 percent, respectively. In tonnage of primary

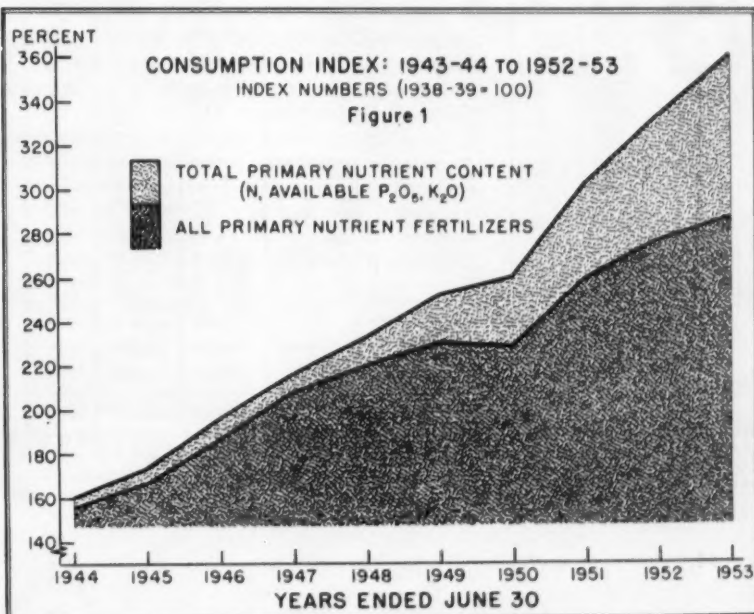


Table 2. - Consumption of Principal Mined Fertilisers in the Continental United States, By Grades. Years Ended June 30, 1965 and 1966

Grade	Consumption		Proportion of Total		Grade	Consumption		Proportion of Total	
	1962-65	1961-62	1962-65	1961-62		1962-65	1961-62	1962-65	1961-62
	Tons	Tons	Percent	Percent		Tons	Tons	Percent	Percent
C0-0-24	4,028	4,510	.03	.05	6-0-9	3,012	9,108	.02	.06
C0-0-27	26,497	36,000	.17	.24	6-0-10	2,942	1,121	.02	.03
C0-0-30	3,194	4,556	.02	.05	6-0-12	4,637	1,764	.03	.01
C0-0-33	62,740	81,760	.30	.38	6-0-14	9,739	6,148	.06	.04
C0-0-36	36,524	22,925	.23	.16	6-0-17	6,224	4,454	.05	.03
C0-0-40	2,795	3,023	.02	.04	6-0-20	216,173	230,666	1.39	1.66
C0-0-42	128,981	191,120	.60	1.29	6-0-22	239,370	263,683	1.66	1.78
C0-0-45	5,840	2,060	.02	.03	6-0-24	374,168	269,656	1.77	1.82
C0-0-48	29,993	26,967	.17	.16	6-0-26	42,695	45,428	.28	.30
C0-0-51	6,076	4,443	.04	.03	6-0-28	14,672	1,508	.02	.01
C0-0-54	3,582	3,801	.02	.05	6-0-30	6,495	6,401	.04	.04
C0-0-57	76,532	141,094	.49	.89	6-0-32	13,839	13,743	.09	.09
C0-0-60	32,796	43,618	.17	.29	6-0-34	9,171	9,779	.05	.07
C0-0-63	886,596	359,421	1.78	2.22	6-0-36	70,840	69,546	.46	.47
C0-0-66	31,769	16,178	.11	.11	6-0-38	89,226	61,680	.58	.40
C0-0-69	12,868	9,310	.06	.05	6-0-40	1,728	1,508	.02	.02
C0-0-72	9,908	6,241	.06	.04	6-0-42	3,028	4,253	.02	.03
C0-0-75	9,927	9,928	.04	.04	6-0-44	85,094	66,867	.54	.38
C0-0-78	2,678	1,699	.02	.02	6-0-46	165,686	136,460	1.07	.82
C0-0-81	26,770	41,568	.19	.29	6-0-48	5,972	8,000	.03	.05
C0-0-84	304,269	231,247	1.58	.97	6-0-50	30,656	23,892	.20	.16
C0-0-87	3,107	1,679	.02	.03	6-0-52	22,608	10,830	.16	.07
C0-0-90	3,838	3,842	.02	.05	6-0-54	6,316	3,242	.04	.02
C0-0-93	6,532	1,978	.04	.01	6-0-56	2,625	2,101	.02	.02
C0-0-96	4,164	6,504	.03	.04	7-0-7	2,678	81	.02	(1/2)
C0-0-99	7,797	7,810	.05	.05	7-0-9	5,314	5,305	.03	.03
C0-1-02	156,610	217,880	1.03	2.16	7-0-11	34,822	27,504	.25	.20
C0-1-05	409,205	402,717	2.66	2.62	7-0-13	3,911	---	.03	---
C0-1-08	3,800	13,401	.02	.09	8-0-0	15,061	16,194	.08	.10
C0-1-11	6,442	13,668	.04	.09	8-0-12	10,127	1,964	.07	.01
C0-1-14	26,666	37,551	.11	.18	8-0-14	16,243	21,828	.12	.16
C0-1-17	671,214	800,336	4.04	5.34	8-0-16	4,978	3,395	.03	.02
C0-1-20	456,699	407,638	2.96	2.78	8-0-18	11,439	11,687	.07	.08
C0-1-23	37,745	43,644	.24	.29	8-0-20	5,091	6,679	.03	(1/2)
C0-1-26	7,081	4,571	.05	.03	8-0-22	2,861	2,972	.02	.02
C0-1-29	164,542	183,369	1.00	1.24	8-0-24	2,835	4,622	.02	.05
C0-1-32	118,009	79,871	.76	.45	8-0-26	4,921	6,162	.03	.05
C0-1-35	6,094	4,504	.03	(1/2)	8-0-28	7,722	10,128	.08	.07
C0-1-38	5,496	5,660	.02	.04	8-0-30	20,192	21,323	.13	.14
C0-1-41	7,715	10,230	.06	.07	8-0-32	342,542	286,142	2.21	1.93
C0-1-44	478,687	682,544	3.10	4.47	8-0-34	4,697	3,693	.03	.03
C0-1-47	2,841,197	2,881,716	16.50	16.41	8-0-36	19,561	11,618	.09	.06
C0-1-50	114,515	107,327	0.74	.71	8-0-38	15,314	12,371	.10	.08
C0-1-53	2,701	2,768	.02	.02	8-0-40	34,949	26,428	.23	.19
C0-1-56	6,125	7,715	.04	.06	8-0-42	7,680	8,740	.05	.06
C0-1-59	17,290	18,366	.11	.10	8-0-44	67,240	43,076	.44	.49
C0-1-62	11,267	71,642	.33	.49	8-0-46	106,141	83,119	.89	.63
C0-1-65	130,503	119,811	.86	.81	8-0-48	53,376	33,111	.54	.40
C0-1-68	6,272	60	.02	.00	8-0-50	6,825	564	.06	(1/2)
C0-1-71	12,756	16,439	.09	.11	9-0-4	12,174	6,218	.08	.06
C0-1-74	461,175	651,664	3.11	3.59	9-0-6	9,737	6,859	.06	.09
C0-1-77	330,422	263,275	2.14	1.78	9-0-8	4,056	2,065	.03	.01
C0-1-80	63,465	39,621	.41	.27	10-0-10	34,396	36,153	.22	.26
C0-1-83	78,166	81,690	.51	.53	10-0-12	5,131	6,636	.03	.04
C0-1-86	77,400	83,960	.50	.58	10-0-14	3,151	1,364	.02	.01
C0-1-89	581,668	622,094	3.76	4.40	10-0-16	2,296	1,414	.02	.01
C0-1-92	527,094	608,264	3.41	3.63	10-0-18	38,403	30,765	.28	.21
C0-1-95	6,094	5,177	.02	.03	10-0-20	16,897	18,906	.12	.13
C0-1-98	9,606	8,404	.06	.06	10-0-22	7,547	28,721	.44	.86
C0-1-01	188,110	247,953	1.04	1.67	10-0-24	400,380	199,386	.94	.59
C0-1-04	7,346	6,738	.05	.06	10-0-26	4,410	3,401	.03	.02
C0-1-07	160,202	215,722	1.04	1.46	10-0-28	4,867	4,813	.04	.04
C0-1-10	204,660	82,562	1.22	.53	10-0-30	10,468	10,670	.07	.07
C0-1-13	3,086	3,699	.02	.03	10-0-32	121,800	84,676	.78	.67
C0-1-16	42,397	42,397	.23	.23	10-0-34	12,768	12,768	.07	.07
C0-1-19	72,296	62,940	.46	.42	10-0-36	8,900	3,702	.02	.01
C0-1-22	473,508	216,224	3.06	1.46	10-0-38	6,391	11,366	.04	.08
C0-1-25	81,268	86,290	.53	.60	10-0-40	12,584	8,078	.08	.06
C0-1-28	8,903	3,269	.06	.02	10-0-42	30,507	8,941	.07	.02
C0-1-31	7,681	20,365	.06	.07	10-0-44	9,449	6,217	.02	(1/2)
C0-1-34	7,762	7,490	.06	.06	10-0-46	5,813	1,897	.02	.01
C0-1-37	6,143	6,181	.04	.04	10-0-48	999	999	.02	.01
C0-1-40	25,977	18,877	.17	.13	10-0-50	72,967	32,076	.47	.22
C0-1-43	6,082	7,865	.03	.05	12-0-4	8,880	6,365	.06	.08
C0-1-46	19,705	33,691	.13	.18	12-0-6	36,991	24,622	.24	.17
C0-1-49	6,462	5,942	.03	.03	12-0-8	15,786	10,287	.10	(1/2)
C0-1-52	877,240	908,353	5.69	6.13	14-0-1	30,162	26,601	.20	.17
C0-1-55	1,116,741	985,290	7.22	5.83	14-0-3	6,008	9	.03	(1/2)
C0-1-58	33,281	10,336	.21	.07	16-0-1	3,078	2,387	.02	.02
C0-1-61	18,338	13,639	.11	.07	16-0-3	2,879	1,047	.02	.01
C0-1-64	9,084	9,446	.06	.06	16-0-5	11,259	11,259	.09	.09
C0-1-67	28,931	11,442	.15	.06	16-0-7	26,406	7,124	.21	.06
C0-1-70	4,084	11,430	.03	.08	16-0-9	6,672	128	.05	(1/2)
C0-1-73	4,023	5,857	.03	.02	17-0-1	32,307	27,467	.21	.18
C0-1-76	17,117	19,612	.11	.13					
C0-1-79	87,476	41,064	.67	.23					
C0-1-82	22,159	22,159	.14	.14					
C0-1-85	6,083	6,381	.03	.04					
C0-1-88	14,680	10,604	.09	.07					
C0-1-91	8,084	8,630	.02	.02					
C0-1-94	3,533	38	.02	(1/2)					
C0-1-97	79,383	70,380	.51	.48					
C0-2-00	16,968	19,736	.11	.13					
177 mixtures						15,066,905	14,638,606	97.49	97.80
Other specified grades						258,288	281,685	1.60	1.90
Grades not shown						128,643	88,314	.83	.60
Total						15,453,836	14,908,604	100.00	100.00

✓ Less than 0.01 percent.

There were 1,149 in 1962-63 and 984 in 1961-62.

There were, at least, 300 grades not shown by their guaranteed analysis.

Does not include the quantity of mixtures consumed in the Territories.

nutrient fertilizers, increases were highest for the East and West North Central regions. Consumption in these regions was 548,341 tons and 344,457 tons above their 1951-52 consumption, respectively.

In the South Atlantic region where the largest tonnage of primary nutrient fertilizers is used, increases in consumption have grown smaller during the past three years. Consumption in 1950-51 was 582,997 tons above the 1949-50 level, in 1951-52, it was but 178,750 tons above 1950-51, and in 1952-53, it was but 93,534 tons above 1951-52.

MIXTURES

The total of all commercial mixtures consumed in the United States and Territories amounted to 15,722,224 tons comprising 1,439 grades reported by their guaranteed analysis and approximately 300 grades the guaranteed analysis of which were not reported. Consumption of mixed fertilizers in 1952-53 was 635,875 tons (4.2 percent) more than the 15,086,349 tons consumed in 1951-52. The quantity of mixtures consumed in the current year also represents 67.15 percent of all fertilizers consumed in the United States and the Territories.

The grades of commercial mixtures reported consumed in amounts of 2,500 tons or more in Continental U. S. in 1952-53, and their consumption in 1951-52, are shown in Table 2. There were 177 of these grades, totaling 15,066,403 tons in 1952-53 and accounting for 97.49 percent of the total quantity of mixtures consumed in Continental U. S. Other grades, numbering 1,149, totaling 258,881 tons, and approximately 300 grades, not reported by their guaranteed analysis and totaling 128,663 tons, were also consumed. In addition, 268,272 tons, not included in Table 2, were consumed in the Territories. Grades consumed in the Territories are not included in Table 2, because those consumed in Hawaii were reported in fractional numbers and the principal grades consumed in Puerto Rico were not the kind generally used in Continental U. S.

The four grades most favored in Continental U. S. were the 3-12-12.



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5-10-10, 5-10-5, and 3-9-6, in the order named. The total tonnage of these grades amounted to 4,905,332 tons and accounted for nearly 32 percent of the total mixtures consumed in Continental U. S. Only the 5-10-10 grade was consumed in larger tonnage in 1952-53 than for 1951-52. The tonnages of the other three were less than their tonnages in 1951-52.

The 15 principal grades consumed in each Region during the current year are listed in Table 3, with their consumption in each of the respective States of the region. The total tonnage of these 15 grades represents 59 percent or more of the consumption of mixed goods in each of the regions. With the exception of California and Florida, the number of grades reported by their guaranteed analysis for each State averaged 57. California reported 317 grades and Florida, 774.

The principal class of mixture customarily consumed in largest tonnage in United States is the so-called complete mixture, N-P-K. Nearly 90 percent of the tonnage of all mixtures was of this class. While for P-K, N-P, and N-K mixtures, consumption was approximately seven, two, and one percent of the total tonnage, respectively. The consumption of each of these classes in regions of United States is shown in Table 5. The N-P-K mixtures were consumed in largest tonnage in all regions excepting the Mountain region, where N-P mixtures are favored.

The national weighted average primary nutrient content of mixed fertilizers increased from 24.86 percent in 1951-52 to 25.85 percent in 1952-53. This average, in 1952-53, comprised nitrogen, 4.63; available P_2O_5 , 11.34; and K_2O , 9.88 percent. The percentage of these nutrients in 1951-52, were 4.30, 11.4, and 9.42, respectively. In the current year, the average N, P_2O_5 , K_2O content of mixtures increased 7.6, 1.8, and 4.9 percent over the corresponding figures for 1951-52. The average nutrient content of all mixtures consumed in each State is shown in Table 7. Although the national average of mixtures shows a general trend upward in all nutrients, the average N content of mixtures con-

sumed in Arizona, Idaho, Utah, and Puerto Rico was lower. In 21 States, Hawaii, and Puerto Rico, the concentration of available P_2O_5 was below that of 1951-52 while for 11 States and the Territories the concentration of K_2O was lower. States in which the concentration of nitrogen was lower were all located in the Mountain region while 13 of the 21 States using mixtures averaging less P_2O_5 were east of the Mississippi

and those averaging less K_2O were mostly located in the Western half of the United States.

MATERIALS

The national consumption of un-mixed materials amounted to 7,690,384 tons in 1952-53. This quantity represents an increase of 344,315 tons or 4.7 percent more than the 7,346,069 tons consumed in 1951-52. The total quantity of materials consumed in 1952-53 comprised 2,987,-

Table 3. - Consumption of Mixed Fertilizers, by Grades, in Each State and Region
Year ended June 30, 1953

State	Fifteen Principal Grades Consumed in Region															All Other Grades		Total Tons
	Tons															Number	Tons	
NEW ENGLAND																		
Maine	70,860	54,700	34,303	10,120	6,640	5,070	9,078	6,069	11,743	12,457	775	653	9,173	68	6,887	41	51,638	803,447
New Hampshire	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	29	5,037	16,523
Massachusetts	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	31	3,409	36,440
Rhode Island	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	27	1,034	18,234
Connecticut	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	47	15,431	89,584
Total	70,860	69,352	34,869	22,134	22,069	19,897	16,657	16,822	16,433	11,444	3,146	9,173	7,462	6,615	9,897	68	57,481	303,646
MIDDLE ATLANTIC																		
New York	70,860	180,820	42,199	20,540	19,132	10,474	19,431	6,645	41,431	811	—	9,310	13,526	9,104	1,266	61	35,869	837,820
New Jersey	70,860	164,713	30,090	2,778	9,867	5,103	2,641	9,053	9,867	4,053	—	9,700	7,700	4,780	74	14,227	23,479	849,498
Pennsylvania	70,860	6,409	2,641	839	9,797	5,272	2,659	2,198	6,987	6,987	—	12,712	1,138	4,940	1,730	—	10,533	606,180
Delaware	70,860	6,409	2,641	839	9,797	5,272	2,659	2,198	6,987	6,987	—	12,712	1,138	4,940	1,730	—	10,533	606,180
District of Columbia	70,860	6,409	2,641	839	9,797	5,272	2,659	2,198	6,987	6,987	—	12,712	1,138	4,940	1,730	—	10,533	606,180
Maryland	70,860	6,409	2,641	839	9,797	5,272	2,659	2,198	6,987	6,987	—	12,712	1,138	4,940	1,730	—	10,533	606,180
West Virginia	70,860	6,409	2,641	839	9,797	5,272	2,659	2,198	6,987	6,987	—	12,712	1,138	4,940	1,730	—	10,533	606,180
Total	609,300	501,975	264,045	81,893	89,119	49,760	69,274	44,861	31,941	27,444	29,611	29,237	24,444	22,204	19,092	346	181,767	1,615,044
SOUTH ATLANTIC																		
Virginia	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	60	32,741	738,749
North Carolina	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	59	37,863	1,252,447
South Carolina	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	24	27,710	730,094
Georgia	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	110	243,940	1,135,668
Florida	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	70,860	789	657,894	2,051,984
Total	683,677	681,077	481,030	454,374	375,763	397,712	520,163	131,624	172,700	930,349	147,842	139,603	107,440	60,770	79,800	869	1,161,890	5,156,173
WEST NORTH CENTRAL																		
Illinois	70,860	34,800	226,446	31,607	9,412	50,977	553	46,353	12,046	13,691	613	3,043	9,697	60	56,433	1,093,384		
Indiana	70,860	34,800	226,446	31,607	9,412	50,977	553	46,353	12,046	13,691	613	3,043	9,697	60	56,433	1,093,384		
Michigan	70,860	34,800	226,446	31,607	9,412	50,977	553	46,353	12,046	13,691	613	3,043	9,697	60	56,433	1,093,384		
Wisconsin	70,860	34,800	226,446	31,607	9,412	50,977	553	46,353	12,046	13,691	613	3,043	9,697	60	56,433	1,093,384		
Minnesota	70,860	34,800	226,446	31,607	9,412	50,977	553	46,353	12,046	13,691	613	3,043	9,697	60	56,433	1,093,384		
Total	1,869,968	1,869,968	1,869,968	1,869,968	1,869,968	1,869,968	1,869,968	1,869,968	1,869,968	1,869,968	1,869,968	1,869,968	1,869,968	1,869,968	1,869,968	2,313	3,716,256	12,229,429

299 tons of chemical nitrogen materials, 359,037 tons of natural organics, 3,109,635 tons of phosphates including the ammonium phosphates, 356,926 tons of potassium materials including the potassium nitrate and potassium-sodium nitrate salts, and 877,487 tons of secondary and trace element materials. The consumption of these classes are shown, by States and regions, in Tables 4 and 5.

The principal changes in the national consumption from 1951-52 in chemical nitrogen materials were the increases in ammonium nitrate-limestone mixtures, 162,328 tons (63.0 percent); anhydrous ammonia, 48,909 tons (29.1 percent); and calcium cyanamide, 39,965 tons (94.6 percent). Sodium nitrate decreased 34,278 tons (5.0 percent). Of the phosphate materials, basic slag decreased 90,237 tons (23.0 percent).

and normal superphosphates, 177,463 tons (14.5 percent) while the ammonium phosphates increased 30,911 tons (13.2 percent) and triple superphosphates, 23,791 tons (10.6 percent). In potassium materials, the 60 percent grade of potassium chloride increased 48,179 tons (38.8 percent) while the 50 percent grade decreased 12,290 tons (10.0 percent).

The weighted average primary nutrient content of the principal classes of materials consumed is given, by States, in Table 7. These averages are based on the composition and amount of the individual material coming within the class. The data show the average quality of the materials composing the class. The national nutrient average, in percent, of materials that contain only nitrogen was 28.54; those containing only P_2O_5 14.48 (available P_2O_5); only K_2O , 51.89; and those having more than one nutrient 21.96. The corresponding averages for these classes in 1951-52 were 27.96 (revised), 14.71, 49.98, and 20.97 percent, respectively. With the exception of the class containing only P_2O_5 the national averages for all the other classes in the current year were higher than in 1951-52 reflecting the greater use of higher quality materials. The drop in the average concentration of P_2O_5 materials was the result of the large decrease in consumption of basic slag and normal superphosphates and only a relatively small increase in use of triple superphosphates.

PRIMARY NUTRIENTS

The national consumption of primary nutrients (Table 6) during the year ended June 30, 1953, was nitrogen, 1,637,056; available P_2O_5 , 2,270,750; (total P_2O_5 , 2,767,990); and K_2O , 1,740,210 tons. These quantities represented net increases over 1951-52 in nitrogen of 214,896 tons, available P_2O_5 , 71,374 tons; (total P_2O_5 , 89,920 tons); and K_2O , 158,743 tons. Consumption of primary nutrients was, therefore, 15.1, 3.2, (3.4), and 10.0 percent greater than in 1951-52, respectively.

The amounts and proportions of the total quantity of nutrients consumed as mixed fertilizers were 728,095 tons of 44.5 percent of the

State	West South Central												
	10-10-00	10-10-01	10-10-02	10-10-03	10-10-04	10-10-05	10-10-06	10-10-07	10-10-08	10-10-09	10-10-10	10-10-11	10-10-12
Alabama	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Arkansas	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Florida	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Georgia	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Mississippi	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Texas	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Total	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550

State	West South Central												
	10-10-00	10-10-01	10-10-02	10-10-03	10-10-04	10-10-05	10-10-06	10-10-07	10-10-08	10-10-09	10-10-10	10-10-11	10-10-12
Alabama	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Arkansas	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Florida	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Georgia	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Mississippi	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Texas	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Total	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550

State	Mountain												
	10-10-00	10-10-01	10-10-02	10-10-03	10-10-04	10-10-05	10-10-06	10-10-07	10-10-08	10-10-09	10-10-10	10-10-11	10-10-12
Alabama	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Arkansas	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Florida	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Georgia	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Mississippi	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Texas	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Total	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550

State	Pacific												
	10-10-00	10-10-01	10-10-02	10-10-03	10-10-04	10-10-05	10-10-06	10-10-07	10-10-08	10-10-09	10-10-10	10-10-11	10-10-12
Alabama	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Arkansas	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Florida	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Georgia	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Mississippi	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Texas	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Total	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550

State	Northeast												
	10-10-00	10-10-01	10-10-02	10-10-03	10-10-04	10-10-05	10-10-06	10-10-07	10-10-08	10-10-09	10-10-10	10-10-11	10-10-12
Alabama	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Arkansas	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Florida	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Georgia	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Mississippi	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Texas	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Total	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550

State	Northeast												
	10-10-00	10-10-01	10-10-02	10-10-03	10-10-04	10-10-05	10-10-06	10-10-07	10-10-08	10-10-09	10-10-10	10-10-11	10-10-12
Alabama	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Arkansas	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Florida	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Georgia	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Mississippi	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Texas	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
Total	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550	8,550

¹ Dash indicates no data was reported.

19/ The total consumption in Brazil was 58,433 tons of sized goods, comprising 95 grades, which were manufactured to consumer's specifications.

Table 4. - Principal Fertilizer Materials Consumed as Such, Year Ended June 30, 1953/

State & Region	Tons														Total Primary Nutrient Materials	Secondary and Trace Element Materials ²
	Chemical Nitrogen Materials					Natural Organics		Phosphates			Potash Materials					
	Ammonium Nitrate	Ammonium Sulfate	Calcium Cyanamide	Sodium Nitrate	Other ²	Dried Manures	Other ²	Phosphate Rock ³	Superphosphates 18-30 Percent Grades	Superphosphates 30-50 Percent Grades	Other ²	Chlorides 50 & 60 Percent Grades	Other ²			
Maine	1,172	113	120	279	295	621	123	14	8,960	0	132	47	72	9,948	90	
New Hampshire	849	36	21	160	70	160	274	12	4,822	0	95	96	11	6,108	82	
Vermont	360	0	2	81	202	80	50	235	12,901	0	24	311	37	14,233	32	
Massachusetts	990	70	247	1,255	295	2,162	4,440	381	6,901	0	912	748	0	17,201	80	
Rhode Island	160	10	40	149	89	302	673	14	699	0	93	49	2	2,150	7	
Connecticut	471	75	46	928	216	1,161	15,401	154	5,008	13	976	1,074	1,212	26,724	1,020	
New England	5,708	508	476	2,862	1,157	4,478	20,981	610	35,991	13	2,259	2,324	1,354	76,418	1,281	
New York	9,667	1,086	1,696	6,210	3,659	3,661	7,161	743	103,167	236	1,020	781	359	141,273	760	
New Jersey	3,643	246	3,131	3,368	2,127	3,609	2,631	585	4,993	8	744	1,166	48	27,692	336	
Pennsylvania	4,638	2,454	1,715	2,670	2,911	3,609	4,610	6,608	53,356	0	4,061	678	366	87,730	1,451	
Delaware	1,981	2	129	806	955	377	80	0	646	0	43	93	0	4,998	296	
District of Columbia	0	4	4	79	6	172	278	0	36	0	39	3	0	420	0	
Maryland	2,036	104	1,114	4,049	2,848	1,078	285	2,310	9,099	10	584	140	446	22,297	277	
West Virginia	490	279	18	1,873	294	199	98	141	13,331	313	35	18	0	17,180	2	
Middle Atlantic	22,558	4,095	7,704	20,986	12,176	12,808	16,310	10,394	168,023	864	6,326	2,676	1,219	301,590	3,118	
Virginia	5,455	154	963	31,719	26,107	1,018	716	2,497	10,307	1,646	1,821	1,316	14,092	97,689	17,311	
North Carolina	17,936	303	14,652	162,696	104,889	470	1,376	1,141	26,111	1,406	8,609	11,923	11,570	342,672	31,446	
South Carolina	20,213	945	1,682	82,266	78,856	312	693	374	32,627	60	11,460	18,676	4,139	262,701	2,536	
Georgia	20,815	2,147	1,998	92,601	46,065	739	1,107	1,267	34,586	56	26,276	10,946	4,261	245,462	16,938	
Florida	9,037	1,908	838	16,600	17,664	1,047	6,697	12,728	8,538	63	6,229	1,776	16,024	99,607	3,546	
South Atlantic	73,454	8,537	19,935	376,942	274,670	2,868	10,469	18,108	112,568	3,633	54,617	44,834	50,086	1,048,051	71,273	
Ohio	11,613	8,168	2,105	1,813	18,096	1,367	8,337	11,690	20,172	3,494	646	2,168	594	90,250	127	
Indiana	40,722	8,805	9,233	973	49,492	723	1,667	37,896	16,688	3,769	172	13,650	388	180,279	67	
Illinois	29,466	2,167	1,668	410	67,717	4,463	6,649	700,838	84,646	7,326	6,594	86,674	765	1,008,074	400	
Michigan	10,018	8,108	287	1,079	9,010	2,013	8,808	9,808	18,021	221	1,676	962	9	63,991	541	
Wisconsin	10,930	784	110	3	1,014	719	8,206	16,908	2,635	78	111	3,945	318	47,783	114	
West North Central	102,744	55,741	13,481	3,878	145,329	9,273	29,667	770,829	182,666	14,867	9,199	106,789	2,074	1,384,367	1,249	
Minnesota	6,097	1,616	161	0	4,480	816	6,619	7,713	10,296	20,519	1,271	787	0	59,348	1,820	
Iowa	21,466	16,869	274	0	18,902	247	1,629	24,772	68,986	6,803	20,302	4,885	11	163,836	82	
Missouri	33,706	7,501	20	256	27,636	837	2,032	263,686	11,098	4,892	5,410	17,227	888	264,800	3	
North Dakota	210	23	160	0	23	0	30	60	341	17,182	3,328	2	0	21,331	200	
South Dakota	2,520	276	0	0	474	25	80	460	2,265	2,145	857	8	0	8,602	0	
Nebraska	28,526	12,061	1	0	29,437	808	770	1,378	7,149	10,086	6,377	81	0	96,374	98	
Kansas	23,693	7,948	1	24	14,264	277	350	9,446	10,238	29,636	32,268	716	0	126,678	17	
West North Central	185,920	44,601	597	280	96,106	2,709	10,490	297,476	100,340	91,343	69,835	25,798	869	863,383	1,904	
Kentucky	31,062	1,897	3,314	4,063	4,036	389	141	14,248	63,731	11,044	8,427	5,331	6,261	186,695	26	
Tennessee	81,512	843	1,909	20,282	15,893	636	690	903	27,170	12,341	18,478	11,190	2,029	162,067	218	
Alabama	96,568	918	392	99,800	23,320	394	180	8,104	50,831	1,777	158,648	9,869	1,182	411,163	610	
Mississippi	123,643	23,267	11,246	54,366	41,014	32	30	7,468	40,431	2,780	71,474	19,882	154	400,896	17	
East South Central	269,596	26,410	16,680	179,221	82,262	1,421	1,041	27,723	182,163	27,942	267,227	46,282	11,576	1,129,739	868	
Arkansas	24,793	6,591	13,678	30,603	18,421	65	88	1,696	29,028	3,472	3,997	28,276	1,149	109,096	6	
Louisiana	28,936	6,649	1,070	27,822	23,692	236	123	4,310	18,190	2,385	19,216	7,549	109	156,192	561	
Oklahoma	7,866	3,064	0	388	1,007	679	316	21,069	36,733	3,727	9,617	3,024	74	86,356	100	
Texas	28,942	35,490	2,778	2,284	22,668	1,687	3,265	20,080	97,181	22,944	89,616	2,236	36	283,020	4,286	
East South Central	84,537	51,896	17,524	60,803	60,872	2,554	3,748	47,044	172,569	32,528	91,645	40,065	1,587	676,672	4,963	
Montana	3,620	3,641	0	0	40	0	39	0	130	12,649	1,300	18	0	21,534	870	
Idaho	9,629	17,693	278	3	802	80	33	100	12,430	9,943	4,184	62	0	54,937	4,719	
Wyoming	1,450	761	0	0	192	10	0	60	1,398	2,262	400	8	0	6,609	320	
Colorado	5,857	2,907	0	40	1,723	10	668	206	4,184	11,719	1,619	174	3	29,060	622	
New Mexico	2,087	1,591	0	11	4,083	1	160	0	1,762	8,996	6,529	2	0	24,942	300	
Arizona	12,106	19,050	465	1,307	30,966	2,382	247	0	4,199	4,306	18,688	6	272	34,951	12,296	
Utah	4,601	13,868	0	0	44	110	90	0	9,935	3,654	1,969	72	10	26,261	399	
Nevada	98	299	0	172	67	82	16	40	253	616	1,140	1	0	2,214	7,399	
Mountain	40,148	60,668	761	1,633	37,617	2,616	1,273	396	26,319	56,014	34,929	340	266	265,098	26,625	
Washington	20,474	16,746	94	342	17,297	1,747	3,649	690	12,240	5,047	6,126	2,744	106	86,301	5,828	
Oregon	23,089	10,158	792	8	10,328	930	666	560	19,797	2,336	16,367	1,367	90	116,097	13,462	
California	71,502	187,542	3,984	499	138,259	4	166,724	84,616	2,259	71,295	14,356	80,725	1,032	748,292	746,860	
Pacific	113,664	214,386	4,870	648	156,884	167,901	68,731	3,529	105,550	21,678	104,235	5,133	4,362	956,690	766,130	
Continental U. S.	846,100	461,272	82,206	847,323	665,065	207,116	161,910	1,176,796	1,042,719	246,602	630,260	272,460	73,172	6,703,978	877,396	
Hawaii	0	36,464	0	187	10,139	12	0	1,167	4,036	0	8,491	9,870	1,682	70,807	92	
Puerto Rico	0	34,811	13	0	1,401	0	0	0	75	11	1,404	55	7	37,596	0	
Alaska	125	13	0	5	1	0	0	0	0	0	81	70	0	817	0	
Territories	165	75,478	13	160	11,641	12	0	1,167	4,108	248	8,746	10,005	1,289	108,919	92	
Total: 1952-53	846,242	534,749	82,219	847,685	676,596	207,127	161,910	1,176,982	1,046,827	246,860	630,996	282,465	74,461	6,812,997	877,487	
1951-52	799,189	486,817	42,284	601,751	572,903	196,726	146,089	1,160,020	1,224,290	225,069	704,787	246,578	73,548	6,661,019	786,060	
1950-51	659,376	461,601	46,222	685,967	466,811	183,460	135,429	1,036,664	1,523,677	239,725	677,701	189,638	61,682	6,566,743	645,259	

1/ Includes materials distributed by Government agencies. Excludes lime and materials used by manufacturers in the formulation of commercial mixtures.
 2/ The principal commodities are shown in Table 5, by regions.
 3/ Includes colloidal phosphate, the quantity of which is shown separately, by regions, in Table 5.
 4/ Estimated.

nitrogen, 1,782,286 tons (78.5 percent) of the available P_2O_5 , 1,920,472 tons (69.4 percent) of the total P_2O_5 , and 1,554,001 tons (89.3 percent) of the K_2O . In 1952-53, the amounts consumed in mixed fertilizers were nitrogen, 12.3 percent; available P_2O_5 , 6.0 percent; total P_2O_5 , 6.3 percent; and K_2O , 9.4 percent greater than in 1951-52. While the amounts of nutrients consumed in materials

were 17.4 and 15.6 percent greater for nitrogen and K_2O , respectively, they were 5.8 and 2.8 percent less for available P_2O_5 , and total P_2O_5 , respectively, than in 1951-52. Total primary nutrients consumed in 1951-52 and in 1952-53 were 5,203,003 tons (revised) and 5,648,016 tons, respectively, an increase of 445,013 tons or 8.6 percent in comparison with the increase of 4.1 percent for

tonnage of fertilizers containing these nutrients. This reflects the trend toward higher analysis fertilizers as evidenced by consumption surveys made over the past ten years, and, as diagrammatically shown in figure 1. The spread between the curves representing consumption of fertilizers containing primary nutrients and of that representing the nutrient content of

Extra Care Means Better Bags for You



V-C representative discusses customer's new printing plate with V-C engraver. Bag Division representatives work closely with top production personnel to make sure rigid specifications are carefully followed.



Part of a battery of heavy rollers which super-seal pasted bags. Carefully applied fast-drying glue and eight minutes of constant, heavy pressure from these rollers securely bond the surfaces of all pasted V-C bags.



Experienced inspectors carefully examine newly tubed bags before they move on to sewing machines. Careful inspections after every step in the production of V-C Multiwall Bags mean a better package for your product.

V-C Multiwall Bags are made by people who understand the importance of careful construction. It's this extra care in construction that makes V-C multiwalls better for your product. Extra care plus modern bag-making methods, materials and machinery give V-C multiwalls the ability to stand rough treatment while your product is being shipped or stored. Without cost or obligation, ask for full details about better-built V-C Multiwall Bags.



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DISTRICT SALES OFFICES: Atlanta, Ga. • Wilmington, N. C. • New York, N. Y. • E. St. Louis, Ill. • Cincinnati, Ohio

Table B. - Kinds of Fertilizers Consumed in Regions of the United States, in Tons, During Year Ended June 30, 1933/

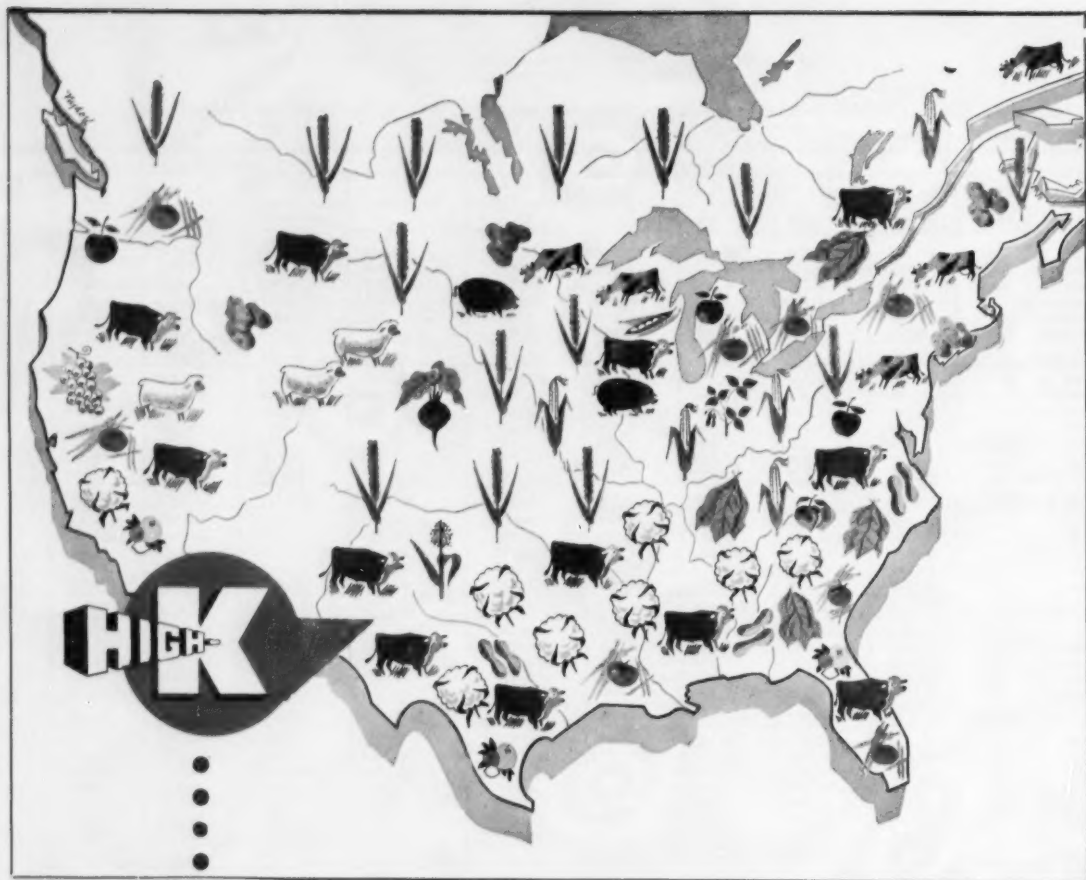
Kinds	New England	Middle Atlantic	South Atlantic	East North Central	West North Central	East South Central	West South Central	Mountain	Pacific	Territories	Total
MIXED GRADES: N-P-K	344,021	1,672,986	4,728,865	3,381,469	913,318	1,870,707	682,036	27,895	239,645	246,878	14,079,818
N-P	92	137	990	777	240,098	384	21,267	43,173	52,403	3,380	343,691
P-K	40,483	140,914	380,675	330,866	73,502	186,980	47,441	200	3,088	2,234	1,097,533
N-K	---	7	161,441	1,884	311	583	---	45	3,131	13,760	161,182
CHEMICAL NITROGEN MATERIALS											
Ammonia, anhydrous	(2/)	(2/)	(2/)	(2/)	(2/)	(2/)	(2/)	(2/)	(2/)	(2/)	217,182
Ammonium nitrate	3,702	23,566	73,434	102,744	125,920	263,696	94,337	40,148	113,864	152	846,252
Ammonium nitrate-limestone mixtures	304	6,041	245,787	76,967	37,629	46,679	7,414	---	24	---	419,845
Ammonium sulfate	303	4,095	5,337	53,741	44,601	28,415	61,886	60,968	214,325	73,478	634,749
Calcium cyanamide	476	7,704	19,933	13,461	597	18,960	17,624	761	4,970	13	82,219
Calcium nitrate	---	---	10,705	---	45	35	---	4,689	32,474	32	47,980
Nitrogen solutions: 16-41% N ₂ /	---	680	2,335	11,089	9,181	84	3,070	6,165	40,313	---	72,917
Sodium nitrate	2,862	20,958	376,942	3,878	280	179,231	60,903	1,533	848	160	647,483
Other ¹	833	6,456	15,943	57,273	46,253	35,464	50,388	25,763	83,073	11,609	8/ 118,672
NATURAL ORGANICS											
Blood, dried	---	245	37	119	---	---	---	11	1,287	---	1,699
Castor pomace	3,061	20	2,389	---	---	---	---	---	1,520	---	6,980
Compost	276	443	772	645	4,038	---	1,748	---	4	---	7,926
Cottonseed meal ² /	10,992	45	1,396	---	---	---	3	---	36	---	12,462
Fish scrap, meal, and emulsions	534	8	---	---	---	---	---	---	1,286	---	1,828
Horn and horn meal	72	---	---	---	---	---	---	---	---	---	72
Manures, dried	4,476	18,603	3,583	9,273	2,709	1,421	2,534	2,615	167,901	12	207,137
Sewage sludge, activated	3,804	8,677	4,239	28,838	8,951	1,036	1,997	1,262	14,027	---	69,881
Sewage sludge, other	---	63	---	---	801	---	---	---	37,967	---	38,531
Tankage, animal	---	593	193	---	---	---	---	---	1,041	---	1,827
Tankage, garbage	---	---	1	---	---	---	---	---	1,200	---	1,201
Tankage, process	1,404	6,209	1,168	265	---	---	---	---	3	---	8,064
Other ³	828	7	314	---	---	---	---	---	360	---	1,606
PHOSPHORUS MATERIALS											
Ammonium phosphate: 11-46	---	6	---	120	3,697	---	---	1,716	5,958	4,144	15,640
" " 16-20	---	---	16	3,061	45,202	63	68,206	26,617	68,990	1,442	210,662
" " 15-35	---	---	458	40	19,089	---	7,635	2,106	9,691	---	38,546
Ammoniated superphosphate	---	---	112	---	---	---	273	---	6,515	1,186	8,701
Basic lime phosphate	---	2,914	48,966	---	---	234,914	14,851	---	---	---	301,637
Basic slag	166	716	635	83	9	6	114	---	1,224	---	2,985
Bonemeal, raw	1,670	2,691	607	1,334	70	528	101	---	1,366	5	8,372
Calcium metaphosphate	---	---	2,222	2,308	4,393	7,124	408	27	196	---	17,678
Fused tricalcium phosphate	---	---	1,708	1,263	403	14,692	---	---	---	---	17,956
Phosphoric acid: 16-63% P ₂ O ₅	---	---	---	---	---	---	57	4,464	9,995	---	14,516
Phosphate rock	610	8,786	16,156	756,894	286,763	14,281	46,672	356	3,339	1,167	1,135,993
Colloidal phosphate	---	1,629	2,949	13,635	8,712	13,442	372	40	190	---	40,969
Precipitated bone	403	---	---	---	---	---	---	---	---	---	403
Superphosphate: 18%	1,768	23,783	54,459	36,344	16,899	40,166	55	2,607	60,982	---	239,217
" " 19%	1,021	1	1,782	5	3,361	1,665	178	23,465	42,371	---	73,839
" " 20%	33,207	161,239	86,127	46,217	80,100	140,343	172,366	2,067	7	4,108	733,771
" " 30-38%	---	10	---	101	2,782	---	6,310	938	4	---	10,145
" " 42%	---	---	---	---	34,044	---	---	37,368	10,326	---	81,738
" " 43-44%	---	---	---	20	88	---	---	---	1,377	---	1,465
" " 45%	4	306	5	3,938	29,132	10,143	21,363	9,794	1,947	21	76,653
" " 46%	---	---	---	2,151	13,124	2,132	1,978	4,771	4,174	227	28,555
" " 47%	9	248	1,534	6,107	6,950	8,284	1,869	2,375	3,880	---	32,668
" " 48%	---	---	888	300	2,703	7,245	1,290	768	---	---	13,194
" " 49-60%	---	---	1,406	270	2,820	168	30	---	---	---	6,394
POTASSIUM MATERIALS											
Cotton hull ashes	568	---	5	---	---	---	---	---	---	---	600
Lime-potash mixtures: 6-10% ⁴ /	---	355	22,939	---	---	1,046	---	---	---	---	24,340
Manure salts: 21-40%	---	8	2,960	411	385	30	610	---	---	---	4,404
Potassium carbonate	76	622	34,422	33,982	808	19,489	20,719	76	363	---	163
" " magnesium sulfate	2,249	2,363	10,412	72,807	23,190	26,793	19,366	266	4,770	10,008	110,288
" " nitrate	167	146	1,941	1,202	484	891	609	---	14	323	6,777
" " phosphate ash ⁵ /	---	25	8,304	---	---	---	---	---	---	---	8,339
" " sodium nitrate	74	---	1,685	---	---	---	14	---	187	---	1,960
" " sulfate	337	678	8,570	452	---	9,547	148	98	4,348	966	22,141
Tobacco stems	---	9	1,103	9	---	---	---	---	---	---	1,121
Wood ashes	---	---	6,418	---	---	---	---	---	---	---	6,418
TOTAL PRIMARY NUTRIENT FERTILIZERS	469,904	2,116,634	6,200,202	5,099,553	2,092,612	3,186,373	1,397,406	336,409	1,287,967	377,191	22,635,121
SECONDARY & TRACE ELEMENT MATERIALS⁶/											
Aluminum sulfate	4	11	1	---	---	2	---	---	---	---	18
Borax	60	210	227	176	5	285	7	4	223	---	1,197
Calcium sulfate (gypsum)	1,097	2,530	68,618	771	1,890	375	860	23,801	737,680	---	837,422
Copper sulfate	32	148	---	120	---	1	---	1	27	---	329
Ferrous sulfate	---	---	---	61	---	---	---	12	---	---	73
Magnesium carbonate	---	---	---	---	---	---	---	---	3,386	---	3,386
Magnesium sulfate	49	50	1	26	---	---	---	---	---	13	139
Manganese sulfate	11	67	127	60	2	---	---	1	34	---	302
Sulfur: 25-99% ⁷ /	3	75	173	1	3	---	4,259	2,762	18,423	---	25,699
Sulfuric acid: 40-92%	---	---	---	---	---	---	---	---	3,340	---	3,340
Zinc sulfate	28	2	29	9	---	24	---	4	66	79	213
Minerals not classified	---	19	2,097	26	4	161	27	40	2,952	---	8,370
Total Sec. & Trace Elem. Mat.	1,281	3,112	71,273	1,249	1,904	868	4,953	26,828	766,130	92	877,467
TOTAL ALL FERTILIZERS	471,185	2,119,746	6,271,475	5,100,802	2,094,516	3,189,241	1,402,359	363,234	1,284,097	377,283	23,412,608

- 1/ Includes distributions by Government agencies. Does not include the quantities of materials used for manufacture of commercial mixtures.
2/ Included with "Other Chemical Nitrogen Materials." Regional data cannot be published without disclosing operations of individual suppliers.
3/ Includes aqua ammonia. 4/ Anhydrous ammonia, ammonium sulfate-nitrate, urea, and chemical nitrogen materials not classified.
5/ Does not include above total for anhydrous ammonia. 6/ Includes materials distributed by other than manufacturers of fertilizers.
7/ Seed and nut meals: Linseed (66), Peanut (60), Soybean (165), Tung (264), Other (360), and organics not classified 7 tons.
8/ Includes cement flue dust. Additional quantities are given free to farmers for which no records are kept.
9/ May have been classified in reports as a mixture-supply less than 2,200 tons.

Table 8. - Consumption of Primary Plant Nutrients in Fertilizers, Year Ended June 30, 1953^{1/}

State & Region	Tons								
	In Mixtures					In All Fertilizers			
	Nitrogen	P ₂ O ₅		K ₂ O	Total N, Avail. P ₂ O ₅ , & K ₂ O	Nitrogen	P ₂ O ₅		Total N, Avail. P ₂ O ₅ , & K ₂ O
		Available	Total				Available ^{2/}	Total ^{3/}	
Maine	12,736	21,776	22,757	25,969	80,471	13,369	23,222	24,235	26,040
New Hampshire	593	1,932	2,037	2,265	4,790	863	2,927	3,075	3,331
Vermont	1,101	4,186	4,356	6,046	11,332	1,299	6,086	7,346	8,246
Massachusetts	3,741	6,539	6,933	6,640	16,920	4,937	8,131	8,533	10,135
Rhode Island	708	1,314	1,393	1,367	3,386	869	1,474	1,663	1,807
Connecticut	3,299	6,201	6,556	6,979	14,379	4,775	6,977	7,432	7,825
New England	22,176	40,947	42,911	48,156	111,278	26,002	49,616	52,184	60,416
New York	27,817	58,975	61,493	45,914	132,506	34,637	80,444	84,132	46,563
New Jersey	12,698	26,409	27,742	24,850	63,957	16,344	27,984	29,515	28,645
Pennsylvania	26,156	73,666	76,565	59,370	159,681	30,479	85,614	90,761	60,545
Delaware	3,853	9,362	9,766	9,276	22,491	6,030	9,512	9,920	9,343
District of Columbia	111	203	207	183	437	140	229	234	131
Maryland	11,308	32,095	34,140	25,990	69,293	15,710	33,492	36,679	26,042
West Virginia	2,228	9,119	9,822	6,715	18,062	2,861	12,065	12,933	6,730
Middle Atlantic	84,070	209,719	219,728	172,538	466,327	103,209	249,780	268,174	174,999
Virginia	23,104	84,018	89,511	71,517	178,639	36,707	87,887	94,169	73,319
North Carolina	58,146	148,066	169,457	125,557	331,758	113,087	165,036	166,955	133,581
South Carolina	26,632	70,431	75,631	57,216	164,278	65,253	73,999	68,694	211,910
Georgia	46,399	102,757	119,246	92,591	240,747	81,494	112,953	130,321	99,401
Florida	55,399	73,521	89,078	85,077	211,997	66,609	76,596	96,809	88,576
South Atlantic	208,679	476,783	532,922	429,957	1,117,419	363,140	510,437	570,963	463,471
Ohio	38,263	134,744	144,446	129,467	302,464	50,605	141,167	164,498	130,924
Indiana	38,706	132,700	141,655	140,953	312,358	68,532	139,099	168,897	148,921
Illinois	29,199	81,422	87,039	93,619	204,240	74,869	120,916	329,492	144,465
Michigan	19,181	78,859	83,946	75,670	173,710	27,627	83,963	90,182	76,297
Wisconsin	12,273	53,172	56,608	61,707	127,162	17,070	54,460	62,786	64,062
East North Central	137,621	480,897	513,693	501,406	1,119,924	236,703	539,605	795,854	564,669
Minnesota	8,951	40,227	42,138	29,240	78,418	13,563	52,891	57,641	29,774
Iowa	20,468	62,255	65,075	32,535	116,256	44,612	84,161	94,709	35,503
Missouri	28,593	72,468	77,827	48,466	149,637	56,268	86,095	104,889	99,146
North Dakota	1,074	4,867	5,112	1,436	7,377	1,614	14,088	14,896	1,437
South Dakota	745	1,709	1,832	140	2,594	1,985	3,362	3,558	142
Nebraska	5,425	10,186	10,293	1,016	16,627	31,850	17,803	18,494	1,072
Kansas	10,023	22,964	24,354	5,376	36,363	30,437	47,391	51,874	5,816
West North Central	76,377	214,716	226,611	118,199	408,292	180,329	308,781	405,961	132,590
Kentucky	18,046	50,359	55,251	44,856	113,261	31,425	72,418	82,049	61,881
Tennessee	16,960	46,656	50,257	39,630	103,146	43,140	61,986	66,488	47,142
Alabama	35,733	84,623	91,268	63,616	183,771	77,374	111,416	122,182	69,404
Mississippi	19,163	31,955	34,468	24,077	76,196	103,741	46,822	54,412	34,781
East South Central	89,892	213,403	231,234	172,078	475,373	266,678	294,641	325,075	203,208
Arkansas	10,444	20,889	22,354	23,461	54,794	42,083	29,696	31,721	39,332
Louisiana	10,754	20,524	21,666	15,808	47,086	41,196	28,136	31,159	19,982
Oklahoma	8,512	8,000	9,468	3,493	15,005	6,761	20,433	27,317	8,316
Texas	16,287	34,724	36,228	18,814	69,826	59,006	76,962	84,758	19,637
West South Central	40,997	84,137	89,300	61,576	186,710	151,045	154,126	174,915	84,266
Montana	376	801	893	40	1,217	2,598	6,689	7,201	49
Idaho	1,544	1,869	1,997	258	3,691	9,460	9,863	12,983	297
Wyoming	348	673	708	49	1,070	1,159	2,969	3,082	54
Colorado	1,868	3,893	3,991	796	6,547	5,762	10,973	11,273	900
New Mexico	237	341	362	60	638	4,406	6,311	6,311	62
Arizona	2,666	3,497	3,671	582	6,745	29,527	11,608	11,649	704
Utah	262	498	524	107	867	5,022	3,341	3,440	158
Nevada	54	86	91	34	174	409	532	567	37
Mountain	7,366	11,668	12,237	1,926	20,949	58,346	52,263	56,826	2,261
Washington	2,211	3,858	4,015	2,954	9,023	25,365	10,827	11,428	4,726
Oregon	1,708	2,589	2,802	1,576	5,673	24,427	11,306	12,047	2,428
California	26,976	25,172	26,539	14,027	66,175	167,592	72,548	76,170	20,687
Pacific	30,695	31,619	33,366	18,557	81,071	207,382	94,880	99,646	27,641
Continental U. S.	697,071	1,766,879	1,901,989	1,524,393	3,987,343	1,583,834	2,260,829	2,745,587	1,704,021
Hawaii	8,164	4,987	5,467	9,433	20,584	19,926	8,162	9,046	16,929
Puerto Rico	24,848	11,397	12,993	20,161	55,406	33,222	11,616	13,212	20,204
Alaska	12	23	23	14	49	74	143	143	56
Territories	31,024	16,407	18,483	29,608	77,039	63,222	19,921	22,403	36,199
Total: 1952-53	728,095	1,782,286	1,920,472	1,564,001	4,084,882	1,637,066	2,270,760	2,767,990	1,740,210
1951-52	648,223	1,680,708	1,806,823	1,420,395	3,749,323	1,422,160	2,199,576	2,678,070	1,661,467
1950-51	583,959	1,541,893	1,687,426	1,254,927	3,380,749	1,236,977	2,109,900	2,536,968	1,379,613

^{1/} Includes Government distribution.^{2/} Includes, as available P₂O₅, 2 percent of the colloidal phosphate and 3 percent of the phosphate rock marketed for direct application.^{3/} Includes, as total P₂O₅, 22 percent of the colloidal phosphate and 32 percent of the phosphate rock marketed for direct application.^{4/} Revised.



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Table 7. - Weighted Average Content of Primary Plant Nutrients in Fertilizers, in Percent, Year Ended June 30, 1953^{1/}

State & Region	Mixtures ^{2/}				Materials					Total Nutrients in Mixtures and Materials	
	N	Available P ₂ O ₅	K ₂ O	Total Nutrients	Single Nutrient ^{3/}			Multiple Nutrients ^{4/}	Total Nutrients		
					N	Available P ₂ O ₅ ^{4/}	K ₂ O				
Maine	6.82	10.81	12.89	30.02	30.47	20.01	50.64	11.22	21.71	29.63	
New Hampshire	5.66	12.65	14.80	31.31	27.64	20.74	57.55	11.60	21.66	28.56	
Vermont	3.10	11.81	17.06	31.97	29.51	20.47	56.90	11.61	21.67	29.01	
Massachusetts	5.49	9.60	9.75	24.84	22.14	20.19	59.66	10.99	18.69	23.61	
Rhode Island	5.28	9.84	10.24	25.36	19.40	19.25	56.70	10.60	16.93	24.19	
Connecticut	6.60	8.66	9.61	23.99	20.54	21.53	51.44	11.21	17.21	21.90	
New England	5.63	10.40	12.24	28.27	24.26	20.51	54.05	11.14	19.31	26.82	
New York	5.38	11.38	8.86	25.61	24.01	20.30	56.68	10.02	20.62	24.54	
New Jersey	5.08	10.66	9.96	25.59	26.22	18.23	55.96	10.22	22.16	25.25	
Pennsylvania	4.30	12.11	9.84	26.25	25.53	18.37	55.44	10.56	19.33	25.38	
Delaware	4.50	10.92	10.82	26.24	31.42	20.01	58.78	9.22	28.46	26.37	
District of Columbia	5.64	10.32	6.25	22.21	15.69	20.75	55.93	9.64	11.46	19.64	
Maryland	4.02	11.42	9.21	24.65	24.41	16.54	52.86	11.27	19.74	24.29	
West Virginia	3.18	13.01	9.58	25.77	20.31	21.20	57.68	8.96	20.86	24.80	
Middle Atlantic	4.63	11.56	9.51	25.70	25.01	19.48	50.85	10.28	20.44	24.96	
Virginia	3.13	11.38	9.68	24.19	21.02	23.69	11.51	9.33	19.73	23.67	
North Carolina	3.61	9.49	8.22	21.72	19.58	18.47	34.06	11.73	20.41	21.48	
South Carolina	3.75	9.91	8.05	21.71	19.81	16.66	50.11	16.65	21.90	21.76	
Georgia	4.04	9.14	8.24	21.42	21.59	16.14	47.41	22.22	21.63	21.46	
Florida	5.27	6.99	7.90	20.16	20.60	9.93	47.62	25.85	19.88	20.13	
South Atlantic	4.05	9.29	8.34	21.68	20.28	16.52	37.15	23.08	20.95	21.56	
Ohio	3.63	12.43	11.94	27.90	28.10	16.89	50.49	9.60	22.42	27.48	
Indiana	3.77	12.94	13.75	30.46	28.23	10.86	55.78	8.21	24.51	29.57	
Illinois	4.53	12.63	14.62	31.68	34.16	4.96	58.55	14.60	13.49	20.69	
Michigan	3.29	13.52	12.97	29.78	27.67	19.73	55.19	9.47	22.00	29.00	
Wisconsin	3.25	14.06	16.34	33.67	35.31	5.74	54.45	9.14	20.21	32.33	
East North Central	3.70	12.94	15.50	30.14	30.87	6.19	57.82	11.20	16.10	26.33	
Minnesota	4.33	19.46	14.14	37.92	36.34	31.48	60.15	7.98	30.01	36.15	
Iowa	5.58	16.98	8.88	31.44	32.40	18.00	59.12	39.90	26.66	29.85	
Missouri	6.12	16.46	10.35	31.91	38.84	4.65	58.94	25.75	14.22	24.17	
North Dakota	5.56	25.65	7.57	38.99	31.23	45.17	55.50	50.71	45.76	42.53	
South Dakota	9.52	21.85	1.79	33.16	36.89	30.02	50.50	34.84	32.98	33.02	
Nebraska	10.98	20.61	2.08	33.65	36.26	32.00	60.50	35.31	35.38	34.79	
Kansas	9.06	20.75	4.85	34.66	33.75	31.04	60.36	42.74	35.12	34.90	
West North Central	6.13	17.47	9.62	33.22	35.49	14.70	59.06	36.96	24.40	29.58	
Kentucky	3.94	10.99	9.78	24.70	30.33	22.63	51.60	8.12	27.29	25.35	
Tennessee	4.06	11.15	9.49	24.70	29.46	26.15	56.72	9.08	30.31	28.27	
Alabama	4.22	9.98	7.50	21.70	22.73	12.39	53.45	18.20	18.10	20.52	
Mississippi	5.70	9.52	7.17	22.39	32.70	13.79	53.41	21.94	27.97	25.43	
East South Central	4.37	10.37	8.36	23.10	28.84	16.39	53.75	12.55	24.62	23.63	
Arkansas	5.30	10.60	11.91	27.81	30.76	22.62	53.93	37.21	33.24	30.32	
Louisiana	5.97	11.39	8.78	26.14	34.20	16.28	54.43	36.06	30.55	28.06	
Oklahoma	5.81	13.24	5.78	24.83	32.64	16.08	56.18	40.28	22.88	25.50	
Texas	5.75	12.26	6.64	24.65	38.07	21.43	59.09	35.55	29.96	27.30	
West South Central	5.69	11.67	8.64	25.90	34.31	19.57	53.84	36.28	29.26	27.87	
Montana	9.59	20.44	1.02	31.05	27.28	43.22	60.60	43.76	37.71	36.72	
Idaho	10.63	12.96	1.79	25.57	25.78	31.08	60.56	38.69	29.30	28.28	
Wyoming	11.54	22.32	1.62	35.48	31.23	39.16	60.50	31.71	36.57	36.29	
Colorado	9.35	20.63	4.22	34.70	36.64	39.76	57.16	26.76	38.16	36.79	
New Mexico	9.30	13.38	2.35	28.03	38.90	41.83	60.50	38.93	40.17	36.77	
Arizona	10.98	14.27	2.38	27.53	37.52	37.53	50.92	34.51	36.96	35.02	
Utah	7.91	16.03	3.23	25.17	23.96	32.30	59.31	34.74	27.09	27.00	
Nevada	7.60	12.11	4.79	24.50	23.03	33.07	60.60	34.15	31.02	29.75	
Mountain	10.33	16.36	2.70	29.38	32.76	37.29	56.62	35.75	34.67	33.55	
Washington	7.31	12.76	9.77	29.84	40.46	27.28	59.76	25.47	36.12	34.51	
Oregon	8.79	13.32	8.11	30.22	27.34	22.17	57.90	36.85	28.06	28.37	
California	10.81	10.08	6.82	26.51	31.94	25.56	53.62	14.18	24.46	24.96	
Pacific	10.32	10.56	6.20	27.08	32.18	25.24	56.01	15.80	25.96	26.22	
Continental U. S.	4.51	11.43	9.66	25.80	28.64	14.47	51.67	21.68	23.14	25.00	
Hawaii	10.55	8.53	16.14	35.22	26.71	16.79	58.25	54.33	33.09	34.06	
Puerto Rico	11.85	5.43	9.61	26.89	22.97	28.06	59.52	20.66	22.97	26.30	
Alaska	8.56	16.62	9.96	35.14	32.27	48.74	60.56	36.25	43.33	41.81	
Territories	11.56	6.12	11.04	28.72	26.13	18.23	58.27	46.19	29.65	28.98	
U. S. Averages:											
1952-53	4.63	11.34	9.88	25.85	26.54	14.48	51.89	21.96	23.24	25.08	
1951-52	4.30	11.14	9.42	24.86	5/ 27.96	14.71	49.98	20.97	5/ 22.16	5/ 24.04	
1950-51	4.18	11.03	8.98	24.19	--	--	--	--	21.14	23.23	

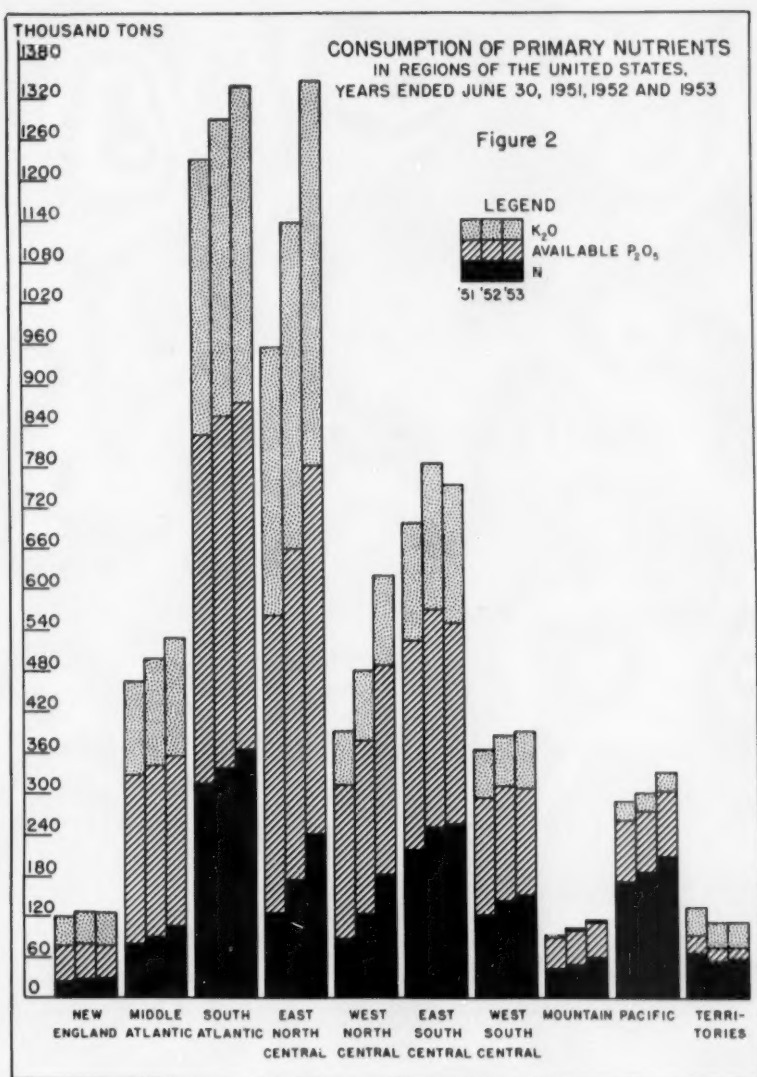
^{1/} Excludes materials not guaranteed to contain N, P₂O₅, or K₂O.

^{2/} Guaranteed to contain two or more of the primary plant nutrients, N, P₂O₅, or K₂O.

^{3/} Guaranteed to contain only one of the primary plant nutrients.

^{4/} Includes the available P₂O₅ content of colloidal phosphate and phosphate rock as 2 percent and 3 percent, respectively.

^{5/} Revised.



the fertilizers has increased rapidly between 1949-50 and 1952-53. During this period, the average nutrient content of fertilizers increased from 22.67 percent in 1949-50 to 25.06 percent in 1952-53; a rise in value of 2.39 in three years. While between 1943-44 and 1949-50, the average increased from 20.58 to 22.67 percent; a rise in value of 2.09 in six years.

The primary nutrient content of fertilizers are based on the amounts of fertilizers reported herein and

their average analyses as found by the fertilizer control officials of the respective state in which these fertilizers were consumed. Figure 2 shows the total tonnage of primary nutrients consumed in each region in comparison with consumption in 1950-51 and 1951-52. State consumption in relation to consumption in 1951-52 is shown by the index numbers, in percent, in the last column of Table 1. These numbers are placed alongside of the index numbers of fertilizer consumption. The

difference in the two numbers is an indication of the change in composition of the fertilizers.

Total consumption of primary nutrients in the New England region and the Territories was approximately the same as in 1951-52 but was four percent less in the East South Central region. In the West South Central region although the amount of fertilizer consumed was 5 percent below that in 1951-52, the use of high analysis fertilizers resulted in a 2 percent increase in the quantity of nutrients. Total nutrients consumed in all other regions increased from 4 to 30 percent.

High analysis fertilizers have changed the order of highest consuming regions. Although, the total consumption of fertilizers is still the highest for the South Atlantic region where consumption amounted to 6,200,202 tons of primary nutrient bearing fertilizers (Table 5) in comparison with 5,099,353 tons in the East North Central region, the nutrient content was but 1,337,048 tons (Table 6) compared with 1,342,877 tons in the East North Central region. The average nutrient content of fertilizers consumed in the South Atlantic region was 21.56 percent (Table 7) in comparison with 26.33 percent for the East North Central region. In terms of primary nutrients, this latter region is now the highest consuming area.

Missions Encouraged Over Foreign Trade

Secretary of Agriculture Ezra Taft Benson said May 13 that information received from the United States foreign agricultural trade missions now making foreign trade surveys in three world areas indicates that the missions are generally encouraged over possibilities of increasing U. S. Agricultural trade on a competitive basis.

He stated that the mission members, listed in our May issue, who are serving as special consultants to the Secretary were meeting with good reception in every country they visited, conducting the series of special foreign trade studies now underway in Europe, Asia, and Latin America.



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Swift Presents Chicago Exhibit

"Food for Life"—a dramatic presentation of the role of right eating in our daily lives—is the title of a new extensive exhibit to be opened at Chicago's Museum of Science & Industry this month as a public service contribution by Swift & Company. It will portray the entire range of man's knowledge of foods for plants, animals and human beings. Almost two million people are expected to see the exhibit annually.

The soil section will show how proper nutrients are necessary in the soil to produce plants which, in turn, will properly nourish human beings and livestock. The plant section will describe how plants convert these nutrients from the soil, water and air into food. The livestock section will tell how meat animals consume many plants which human beings cannot eat; how they concentrate and store this food for human use and make it possible for human beings to have foods rich in the necessary nutrients.



Lion Oil Company's first train-load of anhydrous ammonia ready for shipment from The Barton Plant near New Orleans. Now in partial operation, the plant is expected to be at full capacity some time next month (See page 72 Map item). Shown with the initial tank car shipment

are: (left to right) C. G. Hayes, vice president—Traffic, Texas & Pacific Railway Co.; G. G. Scott, Lion's New Orleans district chemical sales manager; R. L. Van-Zandt, The Barton Plant superintendent; and J. B. Rogerson, Lion's manager of manufacturing.

UDET Appoints Philipp Brothers

Universal Detergents, Inc., continuing their program of sales expansion, this month announced the appointment of Philipp Brothers Chemicals, Inc. as exclusive export sales agents.

Out of their 37 Wall St. offices in New York City, Philipp Brothers

will handle distribution of UDET F surfactants and agricultural chemicals in all countries outside the U. S. In addition, they will continue their distributorship of UDET F products in the Eastern U. S.

The appointment was made by B. R. Bryant, general manager of the Long Beach, California manufacturing plant.

BLAW-KNOX TIGHT-LIP BUCKETS...

PREVENT CONTAMINATION in your Material Handling Operations

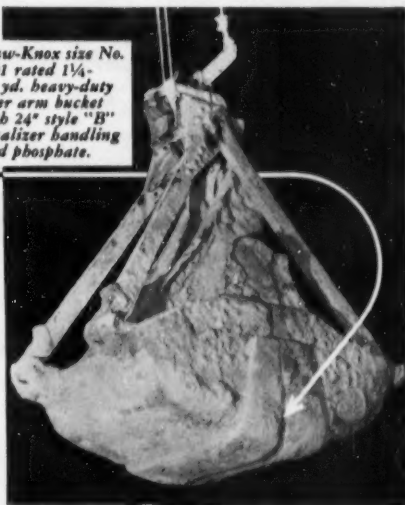
Blaw-Knox Chemical and Fertilizer Buckets are equipped with tight-fitting cast steel lips to prevent costly contamination caused by leakage of granular fines...

one of the many features resulting from the worldwide experience of Blaw-Knox bucket engineers in the design and application of chemical and fertilizer buckets. This expert engineering service is available without obligation for analyzing your operating problems and requirements, and helping you select the proper size, weight and type bucket for peak performance.

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BLAW-KNOX FERTILIZER BUCKETS

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Around the Map

CALIFORNIA

American Potash & Chemical, Trona, have introduced a family of packages for their four major heavy chemicals—potash, salt cake, soda ash and borax. The designs feature color-code heavy bands, with lettering easy to identify and thus to simplify handling and warehousing.

COLORADO

Valley Fertilizer Company, Alamosa, has in operation its new \$100,000 fertilizer plant, rated at 12 hourly tons of mixed goods. The operation is odorless, all-electric drive with all materials conveyor-handled, or via elevators or pay-loaders. Product is non-caking. Officers are: **Dr. Sidney Anderson,** president; **Roy Golston,** vice-president; **Dean McAlpin,** secretary-treasurer. In addition to standard analyses, special custom fertilizers will be produced on order.

FLORIDA

Armour Fertilizer, Jacksonville are building a \$43,365 one-story steel addition to their plant on Talleyrand Avenue.

* * *

International Minerals and Metals donated 27 acres of ground in Mulberry, where a \$300,000 school is being built through cooperation of various concerns and the community.

* * *

Agri-Plast Corporation, Sarasota, are producing Airwrap, which is used to produce roots on a tree branch while it is still growing on the tree. It is a plastic on which various agricultural chemicals have

been processed in stripe, and it used to wrap the point where the roots are to grow.

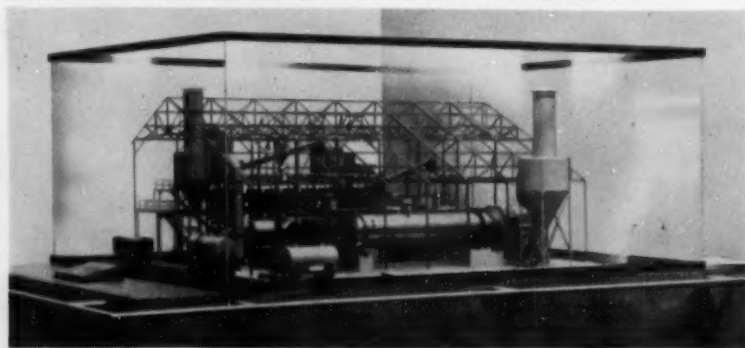
GEORGIA

Monsanto has moved its branch sales office for inorganic chemicals, serving the Southeast, from Birmingham to Atlanta, the division general sales manager, **Tom Smith** has announced. **G. C. Davis** will continue to head the division's activities at 1401 Peachtree Street, where other Monsanto divisions are already located. **J. A. Coffman,** who has been the Atlanta district sales manager for the merchandising division, will continue in charge of administrative activities for this office.

IDAHO

Sullivan Mining Co. is in production with its new \$3,000,000 sulphuric plant near Kellogg, which is jointly owned by **Hunker Hill & Sullivan Mining & Concentrates** and **Hecla Mining.** The plant has a current output of 200 daily tons, will reach 250 daily tons by middle of next month.

The Chemical And Industrial Corporation of Cincinnati, Ohio, will have a working model of their Complex Fertilizer Plant, employing the PEC patented carbonitric process, on display at The Greenbrier during the NFA Convention. This is a complete scale model of an existing plant that is producing 500 tons per day of high analysis fertilizer. Major components of the model will be in operation.



ILLINOIS

The **Granulite Company,** Chicago, are preparing a paper to be read to the meeting of agronomists this Fall, discussing the potential effect of their Ag-Slag on the fundamentals of soil fertility. The slag is a steel by-product. **G. H. Doscher** heads the concern.

* * *

Chicago's Sanitary District Board, headed by **Anthony A. Olis,** is reported as proposing to package the fertilizer produced at its sewage treatment plants and sell direct to the trade. **H. J. Baker & Bro.** holds the contract for the entire output through June 30. Bids recently opened, from **Lawn-Tex** and from **Summers Fertilizer** fell short of consuming the total production of 80,000 tons. In 1953 the District realized \$1,419,000 from the sale of sludge. Mr. Olis proposes to overcome the seasonal nature of the market by "selling in the southern states during the winter months."

IOWA

The **Farmer's Cooperative Oil Association** is planning an anhydrous ammonia establishment in Orange City.

KANSAS

Central Farmers Fertilizer Co., Chicago, has contracted to buy \$2,000,000 in common shares of **Cooperative Farm Chemicals Assn.** whose plant at Lawrence has been building since the Fall of 1952, and should be in production next month. The purchase will provide an outlet, through Central, for 25% of the plant production.

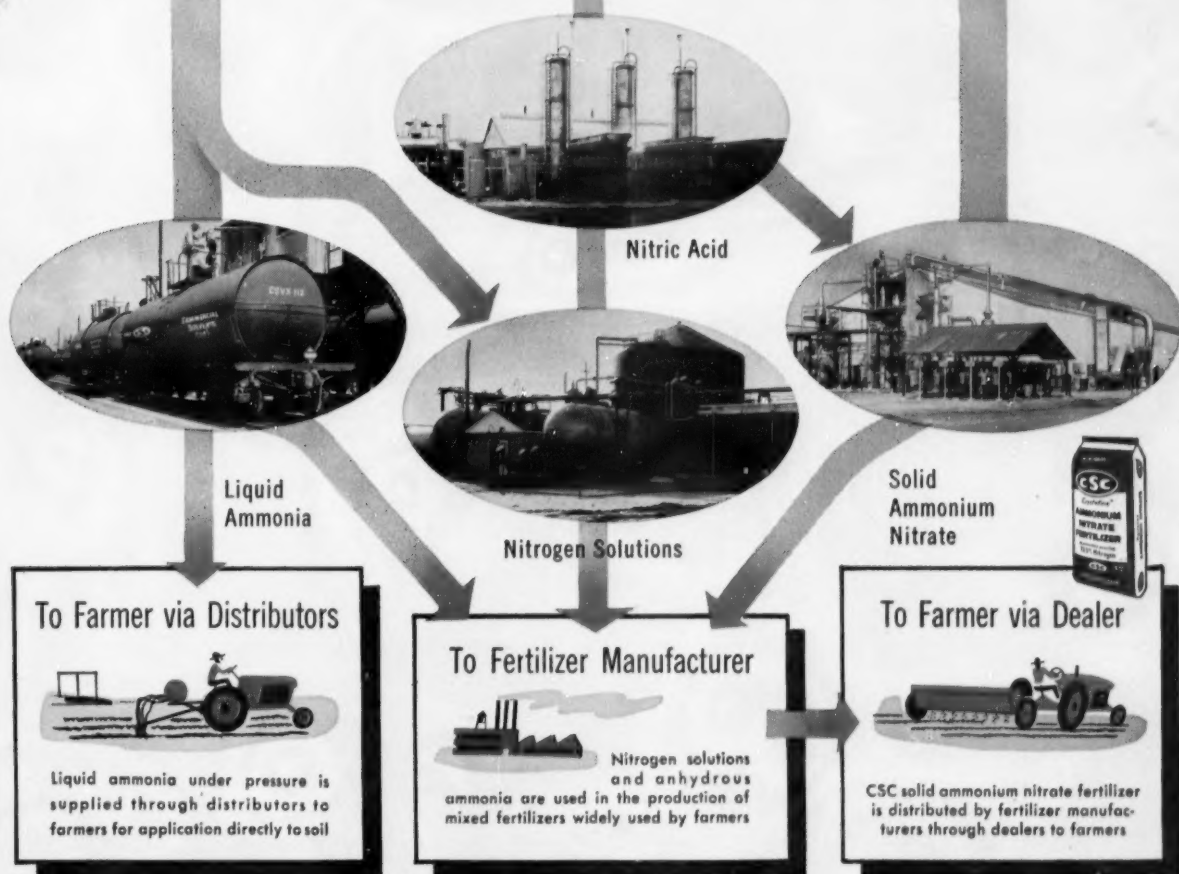
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DAVISON STARTS TRIPLE SUPERPHOSPHATE PLANT

Production of triple superphosphate has been started in the \$10,-400,000 plant erected by The Davison Chemical Corporation on a 45-acre site near its phosphate rock mining properties in Bartow, Florida, and will be as soon as possible stepped up to the plant's 200,000 tons a year rated capacity, it was

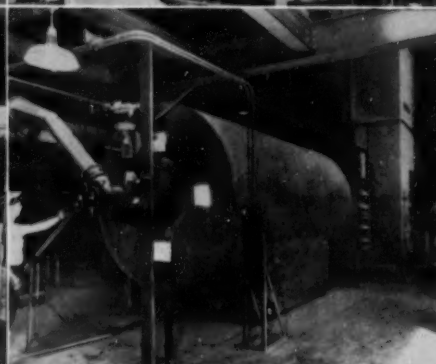
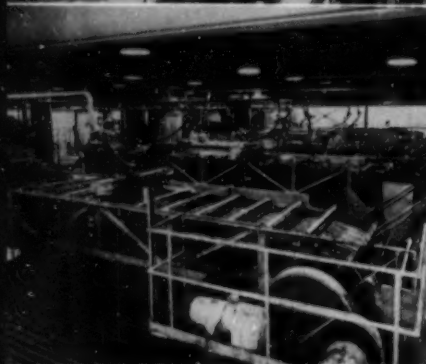
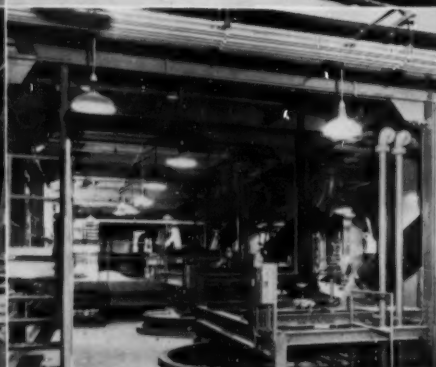
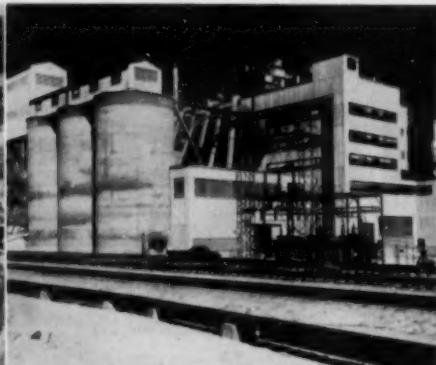
announced recently by the company.

Triple superphosphate, a concentrated form of superphosphate used as a plant food, to supply the essential element phosphorus, is one of the most rapidly expanding agricultural chemicals, because of both economic and agronomic considera-

tions, the company pointed out. The plant will make the company the second largest producer of the chemical and will be an important addition to the expanding industrial economy of Florida, site of the largest known reserves of phosphate rock east of the Mississippi River.

1. Airplane view of Davison Chemical's new \$10,400,000 plant near Bartow, Fla., for manufacture of triple superphosphate at rate of 200,000 annual tons, which will make Davison the second largest manufacturer of this important agricultural chemical. At left is shown the phosphoric acid manufacturing section; immediately in back of it the triple superphosphate manufacture and phosphate rock grinding section; farther back the finished product storage building with loading facilities extending over the railroad spur. Tanks at right of phosphoric acid building are for storage of acid; large silos are for storage of phosphate rock, which is mined by Davison in the vicinity. (A processing plant is in the distant background). Across the tracks at the right is the sulfuric acid plant, rated at 550 tons per day of 100 per cent acid, which is reported by the designers, Monsanto Chemical Co., to be the largest sulfuric acid unit in operation today. 2. Rock-grinding section. Storage silos for rock are at the

left; triple superphosphate production-building at the right; one of the dust-scrubbers (with tower) is seen at far right. Power sub-station is in foreground. 3. Three Raymond 66-inch roller mills used for grinding phosphate rock. 4. Phosphoric acid reaction train. At this point sulfuric acid is reacted with phosphate rock to give H_2PO_4 . 5. Upper level view of equipment shown in previous photo. 6. Slurry recirculating pumps used in conjunction with phosphoric acid reaction train. 7. Giorgini traveling pan filters used for removing gypsum from phosphoric acid. 8. After phosphoric acid is reacted with additional phosphate rock, resulting triple superphosphate is dried in the oil-fired rotary drier shown here. (Combustion chamber is in foreground). 9. Dried triple superphosphate is conveyed into product storage building, 140' x 325'. Shown here is the first final product to be produced. It is shipped both in bulk and bagged, ground and granulated.



Davison's production will be added to a current industry output of approximately 1,000,000 tons annually, of which nearly 80 per cent is produced in Florida. By the end of this year total demand is expected to reach 1,600,000 tons, based on forecasts by the United States Department of Agriculture.

Consolidated Engineering Corporation of Baltimore were the construction contractors for the triple superphosphate plant, with the Dorr Co., Stamford, Conn., as architect-engineers.

Operation is under Davison's Florida Phosphate Division, Dr. Allen T. Cole, manager. Sales are handled through the company's Heavy Chemicals Department at Baltimore, William Caspari, Jr., general sales manager.

Triple superphosphate manufacture involves large quantities of sulfuric acid, and a plant at the site, designed by Monsanto Chemical Company, has a rated capacity of 550 tons of 100 per cent acid a day, making it the largest contact process unit in operation, according to Monsanto. Heat developed in this process is used to power much of the equipment of the triple plant.

The plant will operate continuously, 21 shifts a week, employing 200 with an annual payroll of about \$800,000. In the process phosphate rock, mined by Davison, is transferred to the triple plant by hopper-bottomed rail cars and there elevated to and stored in three silos, each 30 feet in diameter by 47 feet high and holding 1100 net tons. Some 325,000 net tons a year of rock are required for the rated output of the plant.

The rock is transferred from the silos to a grinding system, consisting of three roller mills in closed circuit with "whizzer" separators. After grinding, the rock is transferred to four storage bins holding from 50 to 60 tons of rock each. Lower phosphate content rock can be used than is usual in normal superphosphate manufacture.

The ground rock is reacted, or treated, with the sulfuric acid in a series of tanks equipped with agitators. This reaction produces a

solution of phosphoric acid (H_3PO_4) in which a precipitate of gypsum ($CaSO_4 \cdot 2H_2O$) is suspended. The gypsum will be used as fill in the mined areas.

The slurry of phosphoric acid and gypsum is then filtered on traveling pan-type filters. These filters separate the gypsum from the slurry and the resultant clear phosphoric

acid is then pumped to evaporators, where water is driven off and the acid concentrated. There are three single-effect vacuum evaporators each 15 feet high and 6.5 feet in diameter. The bodies of the evaporators are lined with rubber and the tubes are constructed of Karbate for corrosion resistance.

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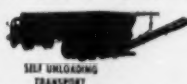
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is mixed with more ground phosphate rock in a series of agitated reaction vessels. The product from this reaction is then mixed with recirculated fine triple superphosphate and fed to an oil-fired, direct heat, concurrent rotary dryer.

The dried material is finished triple superphosphate of varying particle sizes. It is screened to separate, or "scalp out," both oversize and undersize particles. Scalped-out material is recycled back into the process.

In the storage building, 325 feet long by 150 wide, with a capacity of 35,000 tons, the product undergoes a brief final curing before being shipped out. About 20 per cent will be bagged for sale for direct application to the land; the rest will be shipped in bulk for mixing with other fertilizer materials by Davison and other mixed fertilizer producers. Both pulverized and granulated material will be available.

Davison was influenced to enter triple superphosphate production by the strong trend of the past decade toward increased use of concentrated superphosphate. More of this chemical is demanded both for direct application to the soil and in the manufacture of mixed fertilizers of higher plant nutrient content. In 1930, the total production of triple super in the United States amounted to about 100,000 short tons produced in five plants; in 1951-52, to a grand total of 765,358

tons produced in nine plants. In the meantime, the rate of production of ordinary superphosphate also rose to high levels, but not at the same accelerated rate shown by the triple: 3,756,000 tons in 1930; 9,595,255 tons in 1951-52.

Various factors favor rapid development in the use and production of concentrated phosphate.

Normal superphosphate (18-20 per cent P_2O_5) is a product of relatively low phosphorus content, whereas triple, containing 45-48 per cent P_2O_5 , is of a high content. This factor has been one of the major economic reasons which have influenced the development of concentrated. In the long run, the product which can be delivered to the farm at the lowest plant food unit cost, other factors being about equal, is bound to capture the market.

For areas located at long distances from the source of production, triple has the advantage. During the decade 1939-49, the consuming areas showing the highest rate of increase in superphosphate use were the West and East North Central States, and the West South Central States, areas in which local superphosphate manufacturing facilities were insufficient and required in-shipments of phosphate. Triple was the preferred type and was strongly recommended by the local experiment stations. At the same time, these areas demanded a higher concentration in the complete fertilizer

mixtures. Minnesota, for example, required a minimum of 27 per cent plant food in mixed fertilizers before they may be registered for sale in that state—that is a formula in which nitrogen, phosphoric acid and potash combined are at least 27 per cent of the total material by volume. To make such high analysis mixtures requires the use of triple superphosphate.

In the period 1939-50 transportation costs accounted for 10 to 14 per cent of the value of the finished fertilizer at its destination. In addition to this, there is the transportation cost paid on the raw materials delivered to the plants which, in the case of phosphate rock, at present amounts on an average to 35 to 50 per cent of the value of the rock at its destination.

The trend in the concentration of total nutrients in fertilizer mixtures can be illustrated by these facts: in 1900 the average plant food content of all mixed fertilizers supplied in this country was 13.9 per cent; in 1952 it was 22.5 per cent; and the best informed believe that by 1975 the average content will be about 28 to 30 per cent. This trend definitely calls for an increased use of triple super.

Agronomically, the 45 per cent super is as effective a supplier of phosphorus to agricultural crops as the 18-20 per cent. This has been abundantly demonstrated by field tests in all regions over at least a decade of time.

Kingman Liquid Fertilizer, Topeka, has been chartered with \$100,000 capitalization. Resident agent is **M. R. Heldenbrand, Sr.**

KENTUCKY

Cumberland Chemical Company, Hopkinsville, has been purchased by **Virginia-Carolina**, which owns 37 fertilizer plants. V-C takes over operation the first of next month, according to V-C vice-president **Cecil Arledge**.

LOUISIANA

Allied Chemical & Dye have brought into production their \$2,-

500,000 sulphuric acid plant at Baton Rouge. It is their seventh major expansion there, and their twentieth sulphuric plant in the US and Canada, serving fertilizer and other sulphuric consuming industries.

* * *

Lion Oil expects to be producing anhydrous ammonia, nitric acid and pelletized ammonium nitrate fertilizer by the middle of this month at their new \$31,000,000 Barton plant up the river from New Orleans which has been building since mid-1952. It is named for the Lion

Oil chairman, **Col. T. H. Barton**.

The first trainload of anhydrous ammonia was shipped May 17, see page 67 picture.

* * *

Kaplan Seed and Fertilizer Flyers, Inc. is a new concern, at Kaplan.

* * *

S&R Gas Company, Natchitoches, is in business with storage facilities for anhydrous ammonia, tank installations for sizable farms, and custom application, with an investment of \$200,000. Farmers using above ten tons will be able to borrow 4,000 to 6,000 gallon tanks to be installed on their farms and serviced direct from primary sources.

NEW TRI-STATE PLANT

Tri-State Chemical Co. last month dedicated a new fertilizer plant at Henderson, Ky. on which complete engineering service, manufacturing equipment and construction supervision was furnished by Davidson-Kennedy Co., Atlanta. Dedication ceremonies included addresses by Hon. Ben Adams, Commissioner of Agriculture, Commonwealth of Kentucky, A. T. Kennedy, Davidson-Kennedy president, John W. Manning, Tri-State president and Hon. Hecht Lackey, Mayor of Henderson. Attending were more than 500 of the plant's customers, dealers, friends and members of the press and radio.

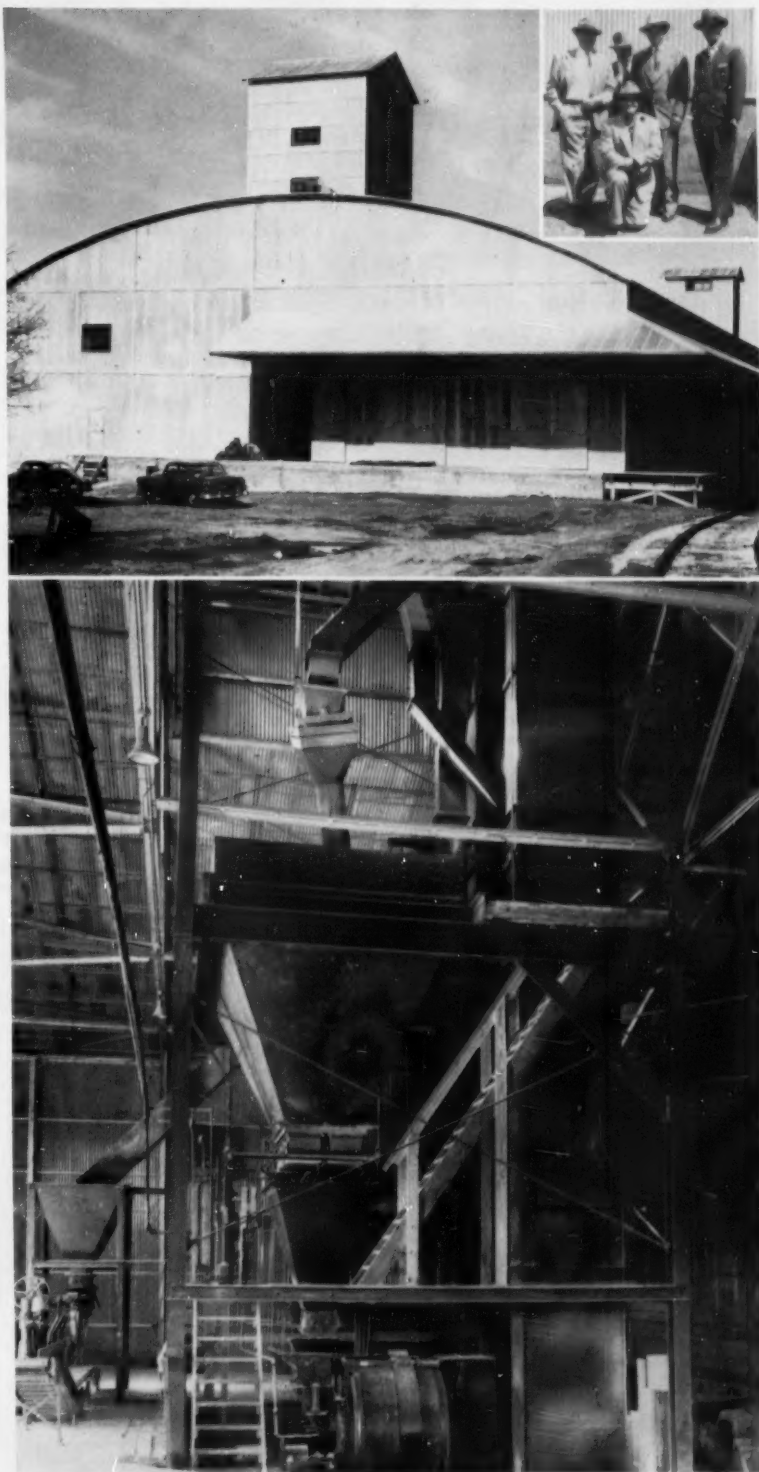
The dedication ceremonies at the completed plant were held only 3 1/2 months after the plans were put on the designing board. Provisions have been made in the design of the plant for increasing capacity to meet requirements.

The site was chosen after surveys by the NFA and USDA. Potential output of the plant is approximately 20,000 annual tons of high analysis fertilizer.

The new plant incorporates the most modern fertilizer machinery. Payloaders transport the materials to an elevator which hauls them to individual storage bins in a cluster hopper. Batches are formulated in a weigh hopper, dropped to the batch mixer and shipped to storage or to bagging. The entire plant is designed to get maximum volume with a minimum crew. According to E. C. Kotts, Davidson-Kennedy vice-president, "This plant represents the last word in engineering achievement. Manufacturing equipment of the most modern design has been economically executed to meet the specific needs of this particular plant. Unusually high operating efficiency and a profitable return on invested capital can be expected."

Tri-State was incorporated in 1953 and is owned by more than 150 citizens of the area it will serve. Officers of the company are: John W. Manning, president; Elmer D. Young, vice-president and Hoke Smith, superintendent.

Exterior and interior shots of the new Tri-State Chemical plant at Henderson, Kentucky. Insert shows President Manning; D. S. King, Cumberland Chemical; Vice-President Young; Ben Adams, Kentucky's Commissioner of Agriculture and, Kneeling, Superintendent Hoke Smith.





I M & C PLANT OPENING

International Minerals & Chemical Corporation's New Fertilizer Plant at Clarksville, Tenn. Left, J. H. Whitesides, Plant Superintendent; Right, J. H. Sibley, Clarksville district sales manager.

Prominent farmers, fertilizer dealers and agricultural officials gathered at Clarksville, Tennessee, recently to celebrate the official opening of the big, new fertilizer manufacturing plant of International Minerals & Chemical Corporation.

The opening day ceremonies were broadcast directly from the new plant over Station WJZM. Some 300 guests toured the plant and heard talks by prominent local officials, agricultural authorities and International personnel.

In charge of the Clarksville Fer-

tilizer operation is James H. Sibley, district sales manager, formerly a coordinator of the Veteran Farm Training program and lately International sales representative in Middle Tennessee and Alabama.

Plant Superintendent is J. H. Whitesides who comes to Clarksville from Tupelo, Mississippi, where he was Assistant Superintendent of the International plant there. Whitesides has been with International for twenty-five years.

H. H. Douthit, located at Cincinnati, is manager of the area which includes the Clarksville District.

Douthit has had wide experience in the fertilizer industry and has been area manager since 1952. Prior to that he served for several years on the staff of International's Potash division.

The new plant, located 5 miles north of Clarksville on Highway 41A, is a dry mix operation, getting superphosphate from International's plant at Florence, Alabama, and potash from International's mine and refinery at Carlsbad, New Mexico.

MARYLAND

Mathieson Chemical's building in Baltimore flies two flags. One is the American Flag, the other the State Flag of Maryland. But when the Baltimore Orioles are playing on the home grounds the Oriole pennant replaces that of Maryland and stays up while the game is in progress and until ended or called.

MASSACHUSETTS

Lee Lime Co. has dressed up its product in colorful sacks, and has packaged its garden lime in green,

red and yellow and in fifty pound instead of the old hundred pound sacks. President **John M. Deely Sr.** says the old hundred pound, drab-colored sacks were kept in the back room of garden shops—but the new ones come out front and remind folks to buy and a former year's supply sells out in two months. Lee Lime was established in 1875, by **Martin Deely**, grandfather of the current president. Vice-president **John M. Deely Jr.** is the fourth generation from the original County Galway Irishman who came back to Massachusetts after a venture into

the gold fields of California. John Sr. was recently elected president of the **National Agricultural Limestone Institute.**

MISSOURI

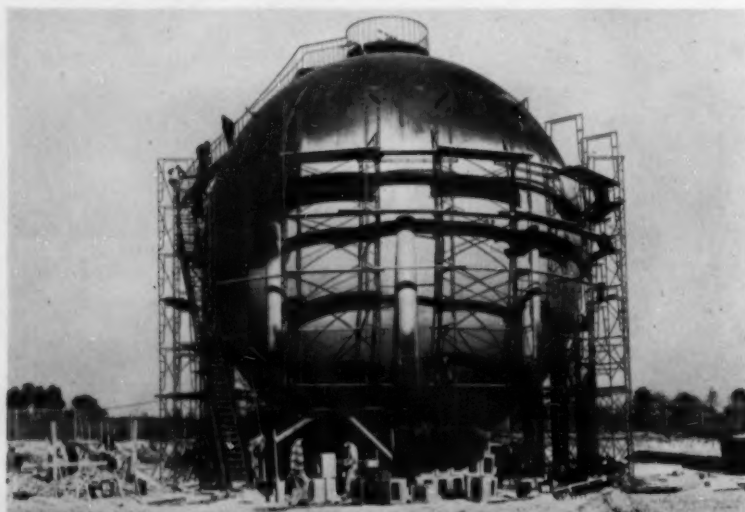
Hercules Powder, whose plan for an anhydrous ammonia plant in Alabama we reported here last month, is now to be recorded as lessee of the **Missouri Ordnance Works**, which they built for the Government. They had an option to take it over, and have an option to buy for \$3,625,000. The plant capacity is 42,000 annual tons of ammonia. They are already getting the plant into operating condition.

• • •

Mississippi River Fuel Corp. expects this year to begin construction of a \$15,000,000 petro-chemical plant south of St. Louis on the river, at Crystal City on a 4,500 acre tract they bought last June. Our readers will remember that MRF and **Mathieson** early last year set up a joint subsidiary — **Mathieson Mississippi Co.**—to study the possibilities of petro-chemical production.

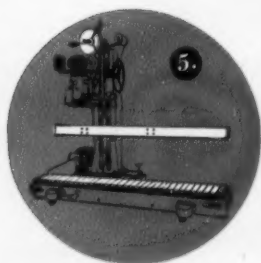
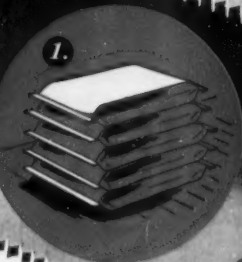
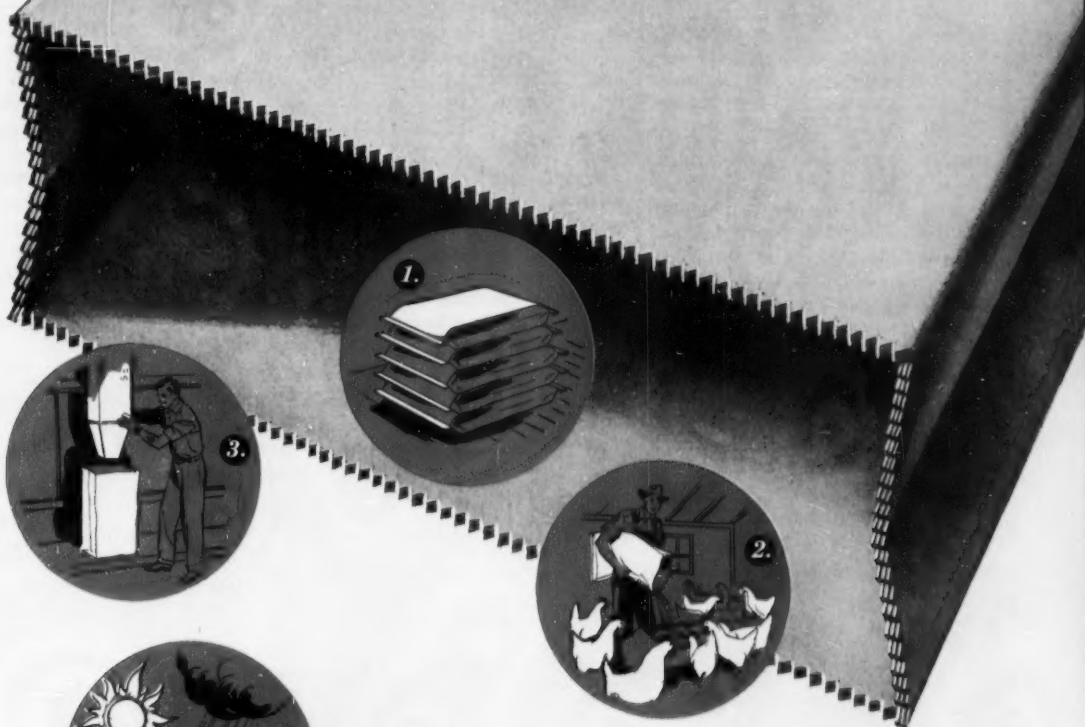
This joint venture was dissolved by mutual agreement this Spring

The Hortonsphere at the \$20,000,000 Grace Chemical Company plant, now under construction near Memphis. The plant as our readers know will manufacture ammonia and urea for industrial and agricultural purposes.



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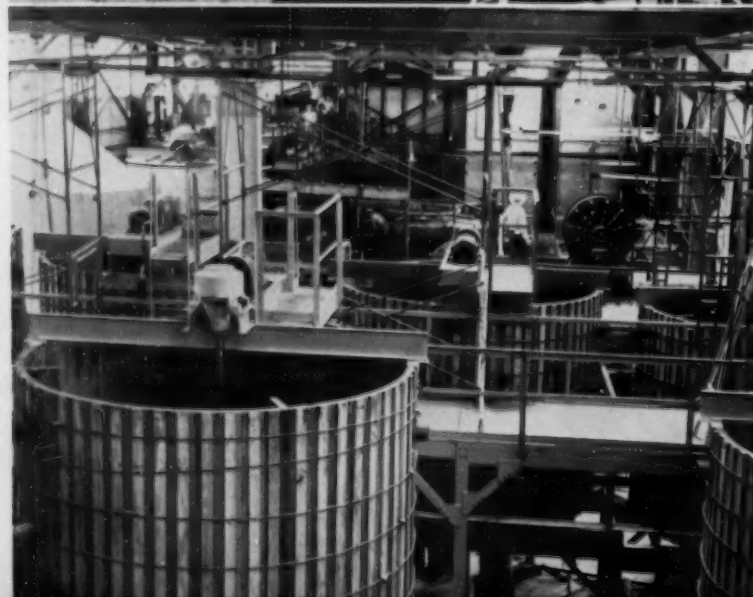
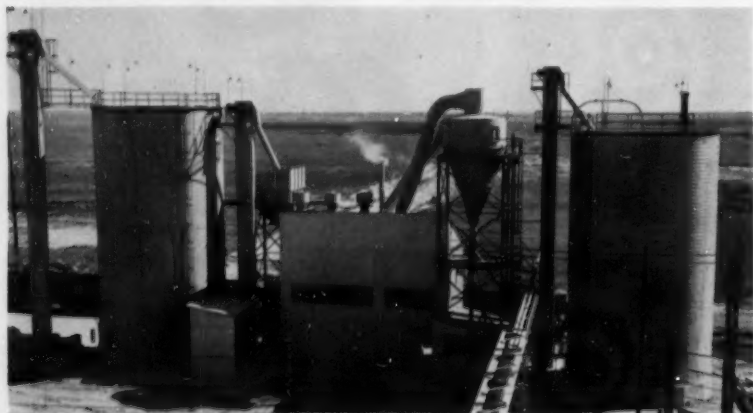
and at the time, **W. G. Marbury** president of MRF said they were considering going on on their own.

The plant is slated to produce 200 daily tons of anhydrous ammonia and 230 daily tons of pelletized ammonium nitrate. Nitric acid for their own use will be produced as needed.

* * *

Missouri Farmers Association's plant near Joplin is expected to be in operation in time for the Fall planting season this year. As our readers know, this is a \$5,000,000 plant which will turn out 70,000 annual tons of ammonium-phosphate, high analysis fertilizers. Building of the new **Eagle-Pilcher** sulphuric acid plant, adjacent, is going along parallel to the MFA construction which it will serve via direct pipe-line.

Here's the new \$8,500,000 plant of Texas City Chemical, now in operation at Texas City, Texas, chemically producing dicalcium phosphate at the rate of 70,000 annual tons. Of this 15,000 tons will go to fertilizer grade. Uranium is extracted as part of the process. Bradley & Baker have established a new district office in Houston, especially to take care of the new Texas City output, of which they are exclusive distributors.



Thurston Chemical's plant at Joplin is progressing well with its expansion program, running into millions. Just begun is a contact sulphuric acid plant which will have a rated capacity of 70,000 annual tons. Thurston is a division of **W. R. Grace**.

NEW YORK

Piestar, Inc. is a new fertilizer and insecticide concern located at 39 Planting Field Road, Roslyn Heights. It was chartered with 1000 shares of preferred at \$100; 2000 shares of common, no par value. Directors are: **Albert Van Brunt**, **Victor T. Raeburn**, **William Man Parkhurst** and **Lyn Boston**.

NORTH CAROLINA

Eastern Guano Company, **Fay-**

etteville, has under several names served Cumberland County for a half century. It began as a cotton gin, with a fertilizer agency on the side. In 1913 it became **Christian-Ewing** and in 1917 built the fertilizer plant which—with many modernizations—is still operating.

In 1928 **Davison Chemical** bought and operated it under the name of **Premier Fertilizer Company**, and resold it in 1940 when it became Eastern.

Owners for the past 14 years are **E. J. Wellons, Sr.** and **Jr. R. J. Boaz** is manager.

OKLAHOMA

Oklahoma Fertilizer & Chemical and the **Chemical Warehousing Co.**, both of Oklahoma City, have merged and will operate as the **Chemical Warehousing Co.**

* * *

Tyler Fertilizer Co., **Morrison**, is ready to put into operation its \$20,000 liquid nitrogen operation. Eight supply tanks with 18,000 gallon capacity have been installed and will be supplied by **Phillips Chemical** according to local informants. The concern will supply Noble, Pawnee and Payne counties.

SOUTH CAROLINA

Etiwan Fertilizer, **Charleston**, have purchased the steel of the old Union Station—400,000 pounds of it—to erect a warehouse on its waterfront property. **James G. Gibbs** is Etiwan's president.

TENNESSEE

Tennessee Eastman organic chemicals division and chemical sales laboratory are undergoing expansion, with new buildings that will add more than 25,000 square feet of space.

TEXAS

Central Texas Fertilizer, **Comanche**, has thought out a smart piece of community relations by entertaining at a dinner the volunteer fire department of their town. The firemen took advantage of the oc-

COMMERCIAL FERTILIZER

casion to stress the need for more modern fire-fighting equipment, and everybody had a good time except the Mayor, who was put on the spot by the proposal to tax all water meters in town to raise money for the equipment. Seems the City is about to raise water rates anyhow!

• • •

Southwest Fertilizer and Chemical, El Paso, which a year ago completed a half million dollar fertilizer and insecticide plant, and which also owns a plant in Odessa, is being hailed locally as "one of El Paso's fastest growing industries." Sales volume for 1953 is reported at \$3,000,000. They also own and operate **Southwest Flying Service**, with 20 planes for dusting, with home base at Pecos. Their trade names are unusual—SWFGRO and SWFKILL.

VIRGINIA

Nitrogen Division has announced the expansion of its nitrogen plant at Hopewell to increase production of anhydrous ammonia by 50,000 annual tons. The ammonia capacity of that plant was increased last year and the new project will further expand ammonia capacity.

WASHINGTON

Simplot has again expanded its **Soilbuilder** operation with facilities at Dayton, Poweroy and Pullman, all served with liquid fertilizer storage, supplied from the Walla Walla main distribution point. They also serve from Walla Walla, Moses, Lake, Eureka, Clyde and Prescott in Washington, and Adams in Oregon. **Wells Laberton** is regional manager.

ARGENTINA

Zarata Sufurico, S. A., near Buenos Aires, is in operation with the 10,000,000 pesos plant that is designed to produce 50 daily tons of sulphur dioxide from zinc concentrates. The equipment was largely supplied by **H. Petersen**, Wiesband, Germany, and is an adaptation of the **Cottrell** System. The plant is expected to cut by 25% the Argentine imports of sulphur, which last year totalled 10,000 tons.

AUSTRIA

Oesterreiche Stickstoffwerke, on which we reported last month, is in Linz, obviously not in Australia as a typographic error made us say. The new plant produces 40,000 annual tons of sulphuric and 5,000 tons of sulphur, and the outfit is headed for completion of superphosphate facilities which will come very close to satisfying Austrian needs without imports. This is a nitrogen fertilizer monopoly and last year produced 490,000 metric tons of fertilizer, selling some 550,000 tons and virtually wiping out the carryover from 1952.

CANADA

Consolidated Mining and Smelting is increasing ammonia capacity at Calgary, Alberta by 50,000 annual tons.

CHILE

Corporacion de Fomento a la Produccion, Antofagasta, has purchased its equipment mainly from **Luigi** of Germany to a value around \$180,000. The plant is to produce 40 daily tons of sulphuric acid, and to be ready some time toward the end of this year.

POLAND

Izvestia, the official Russian newspaper, claims a new nitrogen plant at Kendzezhin which will turn

out by 1955 1,000,000 annual metric tons — twice the entire Polish output for 1952.

SYRIA

A DDT plant may be built in Damascus. US Technical Assistance Administration men are discussing the possibilities with Syrian officials.

Scarsoth

(Continued from page 37)

land like California, especially where water is so limited. The green algae can be used to produce a new type of food in big shallow vats with controlled plant nutrient balances carefully maintained. At first such food might be most valuable for livestock and poultry feeds. To say it might not be developed into a delicious yum-yum for humans would be foolish. I would personally like to try this process. Do I hear a partner?

No more need be said to indicate our aspirations for the next few years.

I would like to paraphrase John Donne, English poet-philosopher of 1573, and say,—The bells will toll for thee only if you expect the worst, but for thee they will surely ring if you can see the stars of our tomorrows.

Better get your fertilizer wagons in shape.

1. Dennis Tillotson, partner in Greer Guano Co., Greer, S. C., scarcely had time to pose for this picture between trips to the cash drawer. We arrived just at plant closing time and the plant employees came in a constant stream to draw a nickle, dime quarter or dollar of their wages, so Dennis was mighty busy for a while. He joined the company, where his father was manager, in 1931 after growing up on a farm near Greer. After his father's death in 1947, Dennis became manager of the plant and three years later he and partner Basco Coggins bought the organization. In his spare time, he enjoys vegetable gardening and an occasional deer-hunting expedition. The Tillotsons live at Greer and have two sons, aged 17 and 14, and two daughters, aged 10 and 8. 2. Basco Coggins, partner in Greer Guano Co., Greer, got into the fertilizer industry 19 years ago "by accident" he says. Looking for a job driving a truck, he found one here and grew to like the business so much that he teamed up with Dennis Tillotson to buy the plant four years ago. Raised on a farm near Reidville, Basco still sticks close to the soil in his spare time, but manages to find occasions to go fishing and deer hunting every now and then. He and Mrs. Coggins live at Greer; their only child, a daughter, married young and recently made Basco a proud grandfather when her son was born.





A device that will give even spread of "wet" limestone and fertilizers, developed by agricultural engineers of the Experiment Station and TVA, is seen here on a field with approximately 45 percent slope. Mounted on the front of crawler tractor, the equipment can be used "up, down, or around" fields with as much as 60 to 70 percent slope.

TVA DEVELOPS NEW SPREADER

By CHARLES W. BROWN
Associate Agricultural Engineer
Tennessee AES

Many more hillsides within the Tennessee River Valley may be brought into profitable production with a ground limestone and fertilizer spreader now under test at the U-T Agricultural Experiment Station.

The device was built by agricultural engineers of the Experiment Station and the Tennessee Valley Authority because of a need which is evident on thousands of acres of steep land within the Valley. Of some 5.6 million acres of plowable pasture in the Tennessee River watershed approximately 2.2 million acres are on slopes of 30 percent or more. Much of the acreage is too steep for cultivation, since about a fourth of it is above 30 percent slope. No machinery has been available which would satisfactorily spread limestone fertilizers, and seeds on irregular-shaped fields in mountainous terrain.

Present commercial machines are not adequate to distribute ground limestone at equal rates regardless of physical condition. Most machines are not recommended by the manufacturer to handle wet materials and will not distribute jointly ground limestone and fertilizers unless they are mixed in the proper proportions prior to filling the hopper.

The drillability or ease of flowing of liming and fertilizing materials is affected by the relative humidity at which the material is stored, the state of subdivision (size and shape of particles, presence of lumps, etc.), the apparent specific gravity, and packing of the material. A measure of the drillability of a material is the angle at which the substance will stand when poured into a pile. When the angle of repose exceeds 55 degrees no free flow can occur, and these materials usually are not drillable with present machines. Free-flowing fertilizers and dry ground limestone have an angle of repose of approximately 35 degrees. The majority of liming materials used in the Valley are locally produced. Stockpiling of these materials at the plant and on the farm generally is outdoors, where exposure to weather keeps the materials wet. When an attempt is made to spread such materials their low drillability is seen in caking or bridging in the hopper. This results in inadequate and incomplete flow.

The U-T - TVA-developed spreader shows promise of adequately handling ground limestone ranging from dry to 12 percent moisture content. At 12 percent moisture content, ground limestone has the consistency of wet cement.

This device is a dual-hopper, broadcast type spreader. This dual-hopper machine is capable of spreading ground limestone and fertilizer, or fertilizer and seed, jointly. The present machine is mounted on the front of a crawler-type farm tractor and is capable of applying combinations of limestone, fertilizer, and seed with a reasonable degree of accuracy throughout the wide variations of drillability.

The crawler tractor was chosen for steep hillside work as it may be used safely on slopes of 60 to 70 percent, whereas it is dangerous to use a wheel type tractor on slopes of more than 30 percent. This spreader may be removed from the crawler, and by means of wheel and hitch attachments, it may be used as a pull-behind machine for general farm planting and fertilizing operations.

Calhoun McLees, president of McLees Fertilizer Company at Anderson, S. C., came into the industry in 1931, following his father who was a fertilizer dealer. Born and reared at Anderson, he acquired a home site north of town a number of years ago and now finds the city is growing right around his acreage. On the plot, just a few steps from his house, "Mac" has a three-acre fish pond—well stocked with bream, bass, crappies and catfish—which he claims as the "best fishing in the county." Mac says he doesn't keep a fish under one pound, and that he recently caught 100 lbs. during three weeks in his spare late-afternoon hours. Despite a plague of fires at the house, on the farm and at the plant (Mac says they come in threes and he's just had two so far in this spell—so look out), the McLees family enjoys living away from the urban area. They have one daughter, aged 21, who attends the University of North Carolina Women's College at Greensboro.



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Personals . . .

Barnwell Fuller, assistant to the vice president of **International Chemical**, while manager of the Florida division of the company was very active in Boy Scout work. Recently he was awarded the Silver Antelope, which is the highest regional award, and second only to the Silver Buffalo award, at a meeting of the Southeastern Region, Boy Scouts of America.

Joseph B. Talley has been named manager of the **Hercules' Missouri Ammonia Works**, Louisiana, Missouri, with **Frank E. deVry** assistant manager.

Mr. Talley has been works manager at Bacchus, Utah, since June, 1952. **Norman L. McLeod**, assistant works manager at Hercules' Kenvil, N. J., plant has been named works manager at Bacchus, replacing Mr. Talley. **John E. Greer**, production manager of the Government-owned Sunflower Ordnance Works operated by Hercules at Lawrence, Kans., was appointed assistant works manager at Kenvil.

J. M. Dampier, with **Coronet Phosphate** at Plant City, Florida for 40 years has moved out of the company house he occupied all those years, into his own home . . . and has retired. He recently celebrated his 77th birthday.

Speaking at a Kiwanis Club meeting in Findlay, Ohio, **Dr. George Smith**, U of Missouri Agronomist, said that the farmer will have to change his mind about fertilization: "If we want to get scared we have only to stop and realize the amount of nutrients being taken out of the soil" he said.

In the course of an item about his birthday, we uncovered the fact that **Thomas W. Phillips 3d**, president of **Orange Fertilizer**, Orlando, Florida, has the hobby of sketching. The birthday is April 19, 1911.

Yale University has named a **Mathieson Chemical** man as its treasurer: **Charles S. Gage**, Yale '25, has been president of **Mathieson Products** and of the Mathieson subsidiary, **Lentheric Division**, until recently.

James O'Hear Sanders, sales manager of **Fulton Bag**, last month received a bronze medallion (which he modestly calls a "paper weight") for outstanding service in the interests of the Georgia Tuberculosis Association. He has played a big part in the effort to have complete TB facilities included in a new hospital, now building in Atlanta.

W. L. Waring Jr., president of **Lyons Fertilizer**, Tampa, Florida, has been reelected president of the **Gulf Freight Association**.

George R. Wiggins has become sales representative in the Southwest for **National Container Corporation's** multiwall bag division.

Jack Rutland, **Southern States Phosphate and Fertilizer**, recently announced a fertilizer which lowers by three degrees the freezing point of Florida citrus. This was revealed in a talk to the St. Simons (Georgia) Rotary Club.

Three executives of Bemis Bro. Bag Company, each with 50 years of service with the company, were honored in Chicago recently by a group of Bemis officers and executives. **C. F. Scott**, left, received a set of matched luggage, **E. R. Bailey**, center, a fine camera and exposure meter, and **R. H. Brown**, right, a gold wrist watch, in recognition of their many years of service. Mr. Scott, a member of the Board, for many years manager of the Kansas City plant, is still active as a counsellor. Mr. Bailey is manager of Bemis-San Francisco. Mr. Brown, manager of the Bemis New Orleans plant until 1948, and since then a special representative of the company, retired on March 31 of this year.



James E. Totman, president of **Summers Fertilizer** announces the appointment of **Dr. C. LeRoy Carpenter** to the position of vice-president and technical director of **Summers** and its affiliate, **Northern Chemical Industries, Inc.** The latter company is in the process of developing an anhydrous ammonia plant and supplemental facilities at Searsport, Maine.

Dr. Carpenter will have headquarters at the home office, Totman Building, 210 E. Redwood Street, Baltimore 2, Maryland.

The board of directors of **International Paper Company** has announced that **John H. Hinman** has been elected to the newly created position of chairman of the board, the company's chief executive office. He will be succeeded as president by **Richard C. Doane**, vice president and general sales manager.

Mr. Hinman joined the company in 1913.

Mr. Doane joined them in 1924.

Replacing Mr. Doane, the Board has designated **F. Henry Savage**, as vice president and general sales manager. He is a veteran of more than 30 years with International Paper.

Joseph P. Monge, vice president and treasurer of the company's Canadian subsidiary, **Canadian International Paper Company** of Montreal, has been elected treasurer of the parent company. He joined International Paper in 1937.

Mr. Monge replaces **Carl S. Volk**.

treasurer of International Paper, who has been elected vice president and treasurer of the Canadian subsidiary. Mr. Volk joined International in 1916.

In a final change in responsibility, Mr. Hinman announced that **Stuart E. Kay**, who was appointed vice president in charge of operation of the company's northern mills in 1951, has in addition been assigned the direction of the company's labor and employee relations.

Olaf N. Rye as general traffic manager replaces the late **Hugo Ignatius**, who died suddenly on April 29th.

Dr. **Bernard Rudner** has joined the research and development staff of **Davison Chemical** and is located at Hilltop Research Laboratories, Baltimore.

The board of directors of **Stauffer Chemical** have elected **Christian de Guigne** to the new position of chairman of the board. Mr. de Guigne had been President for the past 8 years. **Hans Stauffer**, formerly executive vice president and general manager, was elected president, climaxing 34 years' service with the company. **John Stauffer**, vice president and secretary, with 36 years of service, has taken on the added responsibilities of chairman of the new executive committee.

R. C. Wheeler was re-elected vice president and **Christian de Dampierre** re-elected treasurer. **James W. Kettle**, formerly associated with **United States Steel** was elected controller.

All other officers were re-elected to the positions they formerly held.

Ernest G. Holmes, sales manager, Southern region, **Stauffer Chemical** announces the consolidation of its Florida division with its Southeastern area incorporating the states of Georgia, Alabama, Eastern Tennessee, North Carolina and South Carolina. **Melton T. Pearson**, who has been in charge of the Southeastern area has been appointed



Al J. Reinberg, assistant manager of the Fulton Bag plant in Kansas City. Promoted at the same time were Harold C. Forrester to production manager, and J. R. Jones to office manager.

manager of the newly combined area by Mr. Holmes and will transfer his headquarters from Albany, Georgia to Apopka, Florida.

Dr. M. B. Gillis has been made manager of research in organic and biological sciences of the research division of **International Minerals & Chemical Corporation**. **Dr. Paul D. V. Manning**, vice president in charge of the research division, announced.

Dr. Gillis takes over his new responsibilities from **Dr. M. J. Blish** who retires at the end of June. From now until his retirement, **Dr. Blish** will engage in special assignments for International.

Link-Belt announces the appointment of two new West Coast sales managers. **Rodney F. Coltart** is the new sales manager of the Central Pacific division, with headquarters at the company's San Francisco plant, and **Benjamin M. Prestholt** is the new sales manager of the Southern Pacific division, with headquarters at the Los Angeles plant.

Sixty-nine-year-old **Harry W. Huffnagle** will spend his second summer in northern climes among the icebergs and Eskimos.

Huffnagle, president of the **Lancaster Bone and Fertilizer Co.**, Lancaster, Pa., is going along with famed explorer **Donald B. MacMillan**, a friend of 15 years' standing.

They will outfit a schooner, named the **Bowdoin**. It is scheduled to sail from Bowdoin, Me., June 26, and will return about Sept. 5.

What is **Huffnagle's** interest? Why, he is an amateur botanist and plans to observe and collect specimens of northern plant life.

"You might say it is an obsession with me," said **Huffnagle** in discussing his trip. He said he plans to take plant presses along since it is not possible to bring back live plants.

Huffnagle said he believes the group plans to travel 6,000 to 7,000 miles and will go to Etah, Greenland, "and beyond."

Last summer, **Huffnagle** went alone to the Northern part of Labrador on a trip which his friend **MacMillan** helped him to arrange.

A. J. (Jimmy) Sewell has resigned his post as assistant sales manager of the **Stauffer Chemical Co.**, to become associated with the **Traylor Chemical and Supply Co.** of Orlando, Fla.

OBITUARIES

Mrs. E. A. Geoghegan, wife of the Southern Cotton Oil vice-president and NFA vice-chairman, died May 1 at home in New Orleans.

Charles E. Hiott, 26, sales representative for Chilean Nitrate for Florida died April 21 after being in an automobile wreck.

James O. Manning, Jr., 35, Mathieson Chemical representative, died in hospital at Williamston, N. C. May 3.

Charles McCleannhan Nesbitt, 63, Middle Atlantic States district manager for American Cyanamid, died suddenly in New York May 4. During the War, the Nesbitts threw their home open to service men, provided entertainment, sleeping quarters and home-cooked breakfasts for hundreds, who called their home "Club 606."

Costs

(Continued from page 43)

3. Organize your cost facts so that they can be used for estimating profit results.

Keep Reports Simple

Keeping reports simple depends on the exercise of good management thinking to define what is really required in the way of information to run the business. Once this has been established, then self-discipline is required, to reduce the number of reports and the amount of figures to the required specifications, and to keep them that way.

Another way of looking at this matter of simplicity is to recognize that there are limits to the use of any accounting figures. Some figures may state the value of an inventory admirably, and yet those same figures may be very poorly suited to costing alternative management choices. So, if you want to keep reports simple and understandable, you will prepare figures with their end use in mind.

Know All Your Cost Facts

Larger companies generally do a better job than smaller companies in the field of defining and knowing their costs. I think that all of us know at least one small processor who has run into serious financial difficulties because of his failure to provide for unexpected or hidden costs. Some of the other speakers at this conference have pointed out the major hazards and risks involved in this industry. We should remember that these hazards and risks carry dollar signs. The suits being brought against members of this industry on the basis of alleged damage to persons and property cost money to defend, regardless of the outcome of the litigation. In the final analysis, there is only one place for this money to come from, and that is out of sales income. Therefore, sales prices should be set with that fact in mind.

Along the same lines, inventory problems also cost money. It is a fairly common occurrence to find your inventory in the wrong sec-

tions of the country to meet current demand. It then becomes necessary to tranship to another location in order to sell the goods. The additional freight costs, just like any other expenditure, should be provided for in sales income. In addition, all price setters should remember that only out of sales income can they obtain the funds to replace old equipment and depreciated assets. And if you are one of the larger companies in this industry, you will include in your costs those funds required to pay for research to improve your products.

Organize Your Cost Facts For Profit Planning

Management planning really comes down to a choice among alternatives. No matter how restricted the business outlook may be, management has a freedom to choose to do this or to do that. Making a decision in business may be compared with making a decision in poker. Your decision is based not only on what you can see in your

books, but also on what you think that your competitor sees in his books. In addition, of course, your decision is shaped by considerations of markets, strategic advantages, future development possibilities, and many other factors. These imponderables and intangibles necessarily and properly play a great part in business decisions. However, it still remains true that one of the important factors involved in a choice between alternatives is the estimated profit result of one course of action compared with the estimated profit result of another course of action.

The cost figures of your business should be accumulated, handled and presented in such a manner that they can be used to predict profit results of different courses of action quickly and with reasonable accuracy. In other words, your cost figures should be based on the sort of approach which was used in the example of planned profits referred to earlier.

(Continued on page 85)

PLANNED PROFITS — AGRICULTURAL CHEMICAL SALES

ITEMS OF INCOME AND COST	ORIGINAL PLAN	POSSIBLE CHANGES	
		Volume Down 10% Selling Price Constant	Volume Constant Selling Price Reduced 10%
Income From Sales	\$500,000	\$450,000	\$450,000
Less: Freight	20,000	18,000	20,000
	<u>\$480,000</u>	<u>\$432,000</u>	<u>\$430,000</u>
Less Variable Costs:			
Materials & Supplies	310,000	279,000	310,000
Variable Labor	8,000	7,200	8,000
Variable Power	2,000	1,800	2,000
Packages	10,000	9,000	10,000
	<u>\$330,000</u>	<u>\$297,000</u>	<u>\$330,000</u>
Marginal Return	\$150,000	\$135,000	\$100,000
Less Fixed Costs:			
Supervision	25,000		
Selling Expenses	35,000		
Fixed Labor	8,000		
Fixed Power	2,000		
Office	5,000		
Insurance	10,000		
Depreciation	15,000		
	<u>\$100,000</u>	<u>\$100,000</u>	<u>\$100,000</u>
Profit Before Taxes	\$ 50,000	\$ 35,000	\$ -0-
Federal Income Tax	20,500	12,700	-0-
	<u>\$ 29,500</u>	<u>\$ 22,300</u>	<u>-0-</u>

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(Continued from page 83)

Sound accounting control practices and good forecasting and budgetary control techniques each year become more and more of a necessity for any business enterprise. At the present moment in the agricultural chemicals industry, many managements are facing decisions which call for a high degree of skill in estimating and measuring costs. Our example is representative of only one of many such situations.

Just one further comment. The industry you represent has contributed substantially to the well-being of our economy. In making this contribution, your managements

have obviously made more right decisions than wrong ones — and many such decisions have been made successfully without benefit of the most advanced accounting techniques. It is fundamental to recognize that an industry's men are more important than its accounting techniques. But it is also important, I believe, to recognize that management decisions can be made faster, and more soundly, and on more justifiable grounds, if they are made with the help of sound cost accounting procedures, and leavened with a dash of business judgment and imagination.

cess of supply. Prices remain firm and unchanged.

SULPHATE OF AMMONIA: Supply situation continues relatively tight and demand strong. Prices rather steady.

NITRATE OF SODA: Supply continues adequate and shipments steady in seasonal dimensions. Prices continue firm and unchanged.

GENERAL: In most parts of the country the heaviest demand for mixed fertilizers has passed and the season will be over in the near future. Some fertilizer manufacturers are beginning to calculate their needs of raw materials for the new season and it appears that the expected supply of most ingredients will be adequate on account of new productions, particularly of Triple Superphosphate and Nitrogen that will be available for the new season.

MARKETS

ORGANICS: The market on fertilizer organics is very quiet as most fertilizer manufacturers have completed this season's mixed goods requiring organics. Domestic Nitrogenous is nominally priced at \$3.50 to \$4.50 per unit of Ammonia, bulk, f.o.b. domestic production points. Imported Nitrogenous is indicated at around \$4.10 per unit of Ammonia, bagged, CIF Atlantic ports.

CALCIUM AMMONIUM NITRATE: Stocks at several ports are at very low levels as the demand has taken up almost the entire available supply of Imported material. However, at several ports limited supplies are currently available at \$51.25 per ton, bagged, f.o.b. cars at port.

CASTOR POMACE: Limited supplies of New Jersey Castor Pomace are indicated at \$27.00 per ton in bags, f.o.b. producer's works. Texas and Oklahoma productions of Castor Pomace, except for a possible few cars, have all been sold for this season. No offerings have been made for the new season. Offerings of Imported material are quite scarce.

DRIED BLOOD: The New York market is nominal at \$9.00 per unit of Ammonia for unground sacked Blood. The Chicago price is \$9.00/\$9.25. Demand is primarily from the feed trade.

POTASH: Demand is tapering off

rapidly as the season throughout the country nears an end. Three producers at Carlsbad, New Mexico, have announced prices for 1954-55 contracts. One of these producers announces a port price at 61½¢ per unit f.o.b. cars on orders placed before July 1st, less 2% discount on completion of contract. Second and third period port prices are 65¢ and 67½¢. Offerings of Imported potash for shipment from abroad during the new season have not as yet been made.

GROUND COTTON BUR ASH: Interest in this material continues steady and supplies adequate for current demand. Analyses have been running 33% to 38% K₂O. Delivered costs of this form of Potash, primarily in the form of Carbonate of Potash, approximate the delivered cost of Domestic Sulphate of Potash.

PHOSPHATE ROCK: Producers are now negotiating with labor and it appears that upon completion of these negotiations, prices for Phosphate Rock may be somewhat higher. Movement of Rock during the past month has been good but is tending to taper off at present.

SUPERPHOSPHATE: Supplies continue adequate for normal 20% grade and the recent tight supply situation on Triple Superphosphate is easing as the demand slackens towards the end of the season.

AMMONIUM NITRATE: Demand for this form of Nitrogen continues quite strong and somewhat in ex-

Hudson Moves New Larger Office

Hudson Pulp & Paper Corporation have removed their offices to 477 Madison Avenue, New York 22, N. Y. The phone is Plaza 9-7733.

Hyster Used Truck Program Announced

Announced nationally this month, dealers of the Hyster Company, lift and industrial truck manufacturers, have initiated a written warranty program on used lift trucks similar to those used by leading automobile manufacturers.

Featuring the use of the yellow and black "Hy-Quality" tag, the program is designed to give confidence to small-business buyers or those who need a stand-by second truck. The use of warranted used trucks will permit, also, a low cost materials handling experiment or trial of a new materials handling system.

Hyster Company manufactures an extensive line of materials handling equipment with factories in Peoria and Danville, Illinois; Portland, Oregon and Nijmegen, The Netherlands.

PESTICIDES

Mississippi Joins Bollworm Research

Mississippi is the latest cotton state to join in cooperative financing of the expanded pink bollworm research program which got underway last year.

An appropriation totaling \$50,000 for the fiscal years 1954 and 1955 was made by the Mississippi legislature. Governor Hugh White signed the bill.

The funds are appropriated to the Mississippi Experiment Station, with the specification that they may be expended "in cooperation and joint action with any agency of the United States Government, or any agency of any other state, or any private agency engaged in research on pink bollworm."

Insecticides Increase Cotton Yield 25 Percent

Chemical insect control in cotton adds up to about a fourth larger crop on the average, according to entomologists of the U. S. Department of Agriculture.

More than 30 years of insecticide field trials at Tallulah, La., carried on by the Agricultural Research Service, have resulted in an annual average seed-cotton yield of 1,826 pounds per acre—371 pounds, or 25.5 percent, more cotton than from untreated cotton plots, which averaged 1,445 pounds per acre.

Since 1920 when these comparisons began, use of insecticides has always resulted in more cotton, although in 1924 the increase amounted to only 1.1 percent and in 1944, only 1.5 percent. At the other extreme, insecticides boosted cotton production 112 percent in 1950, a year when boll weevils alone took nearly a quarter of the national cotton crop. In 1951, the increase was 85.3 percent; 1952, 18.4 percent, and last year, 19.7 percent.

In all years, the entomologists have compared several plots (or more) to reduce the chance of un-

realistic production averages. Altogether 973 plots have been compared.

Du Pont Announces New Seed Disinfectants

Two new liquid seed disinfectant formulations have been announced by the Du Pont Company. They are for use on small grains (wheat, rye, barley, oats and flax). Both formulations are based on a combination of phenyl mercury acetate and ethyl mercury acetate. Du Pont Liquid 364 is a concentrate to be diluted with water for use in slurry treaters, while Du Pont Liquid 244 is for use undiluted in ready-mix (fully automatic) treaters.

The new materials are backed by experimental work in the green house and test plots, and by the current season's commercial use in spring wheat areas, especially Minnesota, the Dakotas and Montana.

Here is a chemical for your lawn that kills weed seeds and then changes into a fertilizer to make new grass seeds grow. It is calcium Cyanamide produced by the American Cyanamide Co. of New York as a dry granular material under the name of **Lawn & Garden Cyanamide**.

Recognizing the need for a simple and acceptable name for 3, 6-Endoxohexahydrophthalic Acid, the **Pennsylvania Salt Manufacturing Company** has announced it is relinquishing its trade mark rights to the name "**Endothal**" so that this term may be used as the common name for the above chemical compound, which in its various formulations, constitutes a class of widely used Pennsalt agricultural chemicals.

The use of **Chloro-IPC** as a pre-emergence herbicide on onions and lettuce has been accepted by the **United States Department of Agriculture**, it was revealed by the **Columbia-Southern Chemical Corpora-**

tion, major producer of the new herbicide that has been so successful in preventing grasses from choking out young cotton plants.

Tobacco hornworms, tobacco budworms, fleahoppers, and grasshoppers can now be stopped with incredibly small dosages of **Endrin**, it was announced by **F. W. Hatch**, Manager of the Agricultural Chemicals Division of **Shell Chemical Corporation**. The insecticide has just been granted label acceptance by the **U. S. Department of Agriculture** for use against these pests.

New recommendations for the control of the Mexican bean beetle have been made by entomologists of the **U. S. Department of Agriculture**. Recent research has proved the effectiveness of the insecticides **CS-708**, **malathion**, and **parathion** for controlling the Mexican bean beetle, an insect that annually devours an estimated \$5,000,000 worth of edible bean crops in the United States.

A revised copy of **Farmers' Bulletin 1624**, "The Mexican Bean Beetle in the East and Its Control," may be obtained free by writing the Office of Information, U. S. Department of Agriculture, Washington 25, D. C.

Texas Agriculture Commissioner **John C. White** announced that the use of **2-4-D** is now prohibited in seven Coastal Bend counties. This is the first time the **Texas Department of Agriculture** has invoked the power to outlaw a broadleaf plant killer by authority of the Texas Herbicide Law.

Instead of **2-4-D**, White recommended the use of **2-4-5-T**, a similar hormone type herbicide which is equally as effective a weed killer but which is 5 to 10 times less damaging to cotton. **2-4-D** is the only herbicide which is prohibited in the seven-county area.

Florida East Coast Fertilizer Company announced marketing of a new copper fungicide, labeled **Coprider**, for use in controlling fungus diseases in avocado groves. This is the first fungicide to be marketed by **FEC** under its own trade name.

GA PFES, AT PASTURE AWARD DINNER, HONORS WALTER BROWN

May 20th in Atlanta, the Georgia Plant Food Educational Society held the annual dinner honoring the winners of the Georgia Grazing System Contest, which is a major activity of this pioneer local level plant food educational group. Twenty-one prizes are awarded annually, totalling around \$2,000 following a careful judging by capable Society members.

This year's judges were Harry Brown, farmer and retired extension agronomist; T. H. Bonner, Chilean Nitrate; J. R. Johnson, Georgia extension agronomist, who reported at the dinner from their three viewpoints on the winning farmers.

The main speaker of the occasion was the dramatic W. R. Thompson, extension agronomist, Mississippi State, ardent exponent of prosperity by way of green pastures, who presented a forty-five minute talk completely without notes, at high speed—and including his famous bag of tricks—samples of lush and scrawny grasses; plates of dead and rich soils . . . and a string of dollar bills that endlessly emerges as he talks prosperity via the shorted "and most beautiful" route to prosperity.

A sentimental highlight of the meeting was the presentation of honorary life membership to Walter S. Brown, for his leadership and advice and consistent support of Ga. PFES.

Walter Brown, presiding, spoke of the good job being done by the Georgia group, one of the pioneers in a movement which has now

spread across the nation, in pulling together the various elements which stand ready to advise the farmer. He spoke of the Georgia pasture contest as one of the best in the nation because it fits the pasture into a balanced farm program, and offers a practical demonstration to the entire State.

Dr. Thompson in his talk on his crusade for grass, which he asks all groups to join when he addresses them points out that grass is not only profitable, but beautiful. It improves good soil and reclaims eroded soil.

He outlined a program . . . 1. Machinery, which includes lights and other electrical things for the home. 2. Plant food. 3. Pesticides. 4. Information. On the latter he stressed that today the farmer can ask questions and get answers—which has not always been true.

He set up six points: "Follow these and I'll guarantee grass," he stated. 1. The plan . . . soil testing, fencing 2 grasses for all year pasture and harvesting. 2. Fertilizer. Fertilize the plant, not the soil and give it plenty. 3. Seeding—the right combination of date, rate and the grasses that fit your soil. 4. Management will give you good grasses all around the calendar. 5. Feeding—from your own bales or silo. 6. Pesticides to protect your investment.

A few notes: Refertilize when the grass is well up—not waiting for it to go bad. Band-seeding and band-fertilization now possible all on the same trip with new distributors.

Plant on 20 inch centers. Grass will cover.

Take God as your partner.

Senator Harry Brown spoke of the fact that the right to a fair price for farm products brings the responsibility to do an efficient job. Herb Bonner emphasized following recommendations and applying knowledge we have today. J. R. Johnson emphasized Georgia's pasture progress and the good work of the Ga. PFES.

Any meeting looking for a speaker on pastures should call on the junior member of the Georgia state-prize winning team, Curtis Avery Jr. His ad lib presentation of their winning method was beautifully done. His points: God is our partner. The county agent and the extension forces have been tremendously helpful. His ag education at the University of Georgia. The banks, which financed the whole winning farm from scratch (they own two farms). Fertilizer, which made possible "expansion in depth."

KEY TO PICTURES

The CF camera misbehaved a little on this meeting, and some shots are not too clear and we are sorry. But this is the story on them: 1. Georgia Plant Food Educational Society. W. A. Higginbotham, Jr.: 2. Walter S. Brown seems to say "Who, me?" as Billy Barton, Tennessee Corporation, reads the citation which made the U of Ga. associate director an honorary member of Ga. PFES. 3. Many will recognize this pose of chief speaker W. R. Thompson, Mississippi State extension agronomist, hiding behind a sample of grass as he thinks grass should be. 4. J. Fielding Reed, Secretary-Treasurer, doubles with the slide projector. 5. Dr. Hayden Rogers, U of Ga. agronomy department head, presents the awards. 6. C. B. and Curtis Avery, Jr. State first place winners. 7. Fred McCracken, State 3rd place winner. Second place was not present. 8. Harry Brown, former extension man, now retired and a farmer. 9. T. H. Bonner, Chilean Nitrate. 10. J. H. Johnson, extension agronomist. The last three judged the contest.



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Safety

Commercial Fertilizer Given Safety Award

The National Safety Council has awarded the 1953 Public Interest Award to Commercial Fertilizer Magazine, for exceptional service to safety. We have also received the thanks of Vernon S. Gornto, general chairman of the Fertilizer Section for our "splendid coverage" of the subject.

Planning Committee Attends 4 Meetings

The three-year planning committee, Fertilizer Section, National Safety Council, whose portraits are shown in the group picture to the right, recently attended two meetings of their own group last month, the President's Safety Conference in Washington, and the Governor's Safety Conference in Baltimore.

They report excellent progress in their work. Louis Wilson, APFC met with them one afternoon and Russell Coleman had breakfast with the group one morning, both to discuss the objectives which should be included in the three year program they are to present.

The meeting in Baltimore attracted forty who were given an excellent

This is the new Sulphur Dioxide Gas Detector made by Mine Safety Appliance Company, said to be exceptionally accurate. For details, write the company at Braddock, Thomas and Meade Streets, Pittsburgh 8, Pa.



THREE-YEAR PLANNING COMMITTEE, FERTILIZER SECTION,
NATIONAL SAFETY COUNCIL

Left to right: T. J. Clarke, Administrative Assistant and Director of Personnel, G. L. F. Soil Building Service, Ithaca, New York (also, vice chairman, Fertilizer Section, National Safety Council and editor of the Fertilizer Section's Safety News Letter); F. Wayne High, Manager of Operations, The Baugh Chemical Company, Baltimore, Maryland (also, chairman of the Contests and Statistics Committee, Fertilizer Section, National Safety Council); John E. Smith, safety director, Spencer Chemical Company, Pittsburg, Kansas (past general chairman of the Fertilizer Section, National Safety Council); and Curtis A. Cox, Assistant Manager, Virginia-Carolina Chemical Co., Richmond, Virginia (also, secretary of the Fertilizer Section, National Safety Council).

program of speakers by Tom Clarke, chairman.

Those who attended the President's conference were: John Smith, Vernon Gronto, Tom Clarke, Curtis Cox, Bill Richardson, Tex Watts and John Mark, all members of the Executive Committee. The Baltimore meeting was attended also from the Executive group by Smith, Gornto, Clarke, Cox and Watts.

The committee will meet again at the Greenbrier June 13, between the APFC and the NFA conventions. The nominating committee will meet the evening before, also at the Greenbrier.

Twentieth Annual Virginia Safety Conference

On Thursday, May 20th, the Twentieth Annual State-Wide Safety Conference met in Norfolk. Conference Headquarters was at the Monticello Hotel and the meetings extended through May 22nd—with a banquet Friday evening, May 21st. Fertilizer Section meetings were held on Friday, May 21st.

C. P. Hearne, Safety Engineer, Virginia Department of Labor and Industry, started the meeting with a talk on "How To Make a Safety Inspection." Following Mr. Hearne, C. D. Brightwell, Superintendent of the Virginia-Carolina Chemical Corporation Plant, Portsmouth, Virginia, discussed the "Evaluation and Follow-Up of Safety Inspection Reports." The "Selection of Employees from the Standpoint of Accident Prevention" was discussed by J. F. McCormick, Superintendent Industrial Relations, Nitrogen Division, Allied Chemical & Dye Corporation, Hopewell, Va. Last speaker of the morning session was P. W. Logan of Liberty Mutual Insurance Company, whose topic was "Selling Safety to Supervisors . . ."

Paul T. Truitt, president of the American Plant Food Council, told how "Safety Pays Off in the Fertilizer Industry." Following Mr. Truitt's address, there was an Inter-Company Safety Meeting in which everyone present was invited to participate in questions and answers regarding safety in fertilizer plants.

COMMERCIAL FERTILIZER

CLASSIFIED ADVERTISING

For Sale, Exchange and Wanted Advertisements, same type now used, EIGHT CENTS a word for one insertion; TWELVE CENTS a word for two insertions; FIFTEEN CENTS a word for three insertions, and FOUR CENTS a word for each insertion more than three; ADVERTISEMENTS FOR THIS COLUMN MUST BE PAID IN ADVANCE.

FOR SALE: One 12 ton Sulphuric Acid Trailer. Can be altered to meet your requirements. Pictures and price on request. Used one year. Tennessee Farmers Cooperative, LaVergne, Tennessee.

STEEL TANKS FOR SALE: Dished heads—all welded. Excellent for storing liquid fertilizer, chemicals, etc. At Brooklyn, N. Y. (14) 7500 gal. (2) 6000 gal. At Tonawanda, N. Y. (2) 7000 gal. At Reading, Pa. (9) 4600 gal., (5) 4300 gal., (2) 3800 gal. At Philadelphia, Pa. (3) 13,700 gal. (3) 9150 gal. **PERRY EQUIPMENT CORP.** 1426 N. 6th St., Philadelphia 22, Pa.

FOR SALE: New St. Regis 160 F. B. Valve Packer Complete located Midwest. Box 30, c/o Commercial Fertilizer, 75 Third St., N. W. Atlanta, Ga.

FOR SALE: New Leader Fertilizer & Lime Spreader, body 6 feet wide, 11 feet long, late model with auxiliary engine, bought new, February 4, 1952. For sale very reasonable. Farmers Cotton Oil Company, Wilson, N. C.

WANTED: Young, efficient superintendent for dry mixing plant, southeastern territory, capacity about 50,000 tons. Box # 29, c/o Commercial Fertilizer 75 Third St., N. W. Atlanta, Ga.

FOR SALE: Complete dry mixing fertilizer plant at port in Eastern North Carolina. Now operating. Ideal location, wonderful farming trading area. Capacity 50,000 tons. Inquiries invited for prompt attention. Box 75, c/o Commercial Fertilizer, 75 Third St., N. W. Atlanta, Ga.

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115 E. Bay Street, Savannah, Ga.

NFA

(Continued from page 40)

Eugene German; E. W. Harvey; B. H. Jones; E. D. Kingsbury; E. M. Kolb; Maurice H. Lockwood; H. B. Mann; Charles F. Martin; Rex L. Morgan; S. L. Nevins; George E. Pettitt; B. P. Redman, Jr.; Marshall A. Smith; Jack B. Snyder.

COMMITTEE FOR MEN'S GOLF EVENTS: Chairman, John W. Hall; Jeff Collins; Dallas D. Culver; W. Morris Newman; Gene Van Deren.

COMMITTEE FOR LADIES' GOLF EVENTS: Chairman, Mrs. W. B. Porterfield; Mrs. Vernon Bishop; Mrs. J. Porter Brinton, Jr.; Mrs. J. F. Corkill; Mrs. A. Norman Into; Mrs. William J. Murphy.

TENNIS COMMITTEE: Chairman, Joseph Mullen, Jr.; George H. Dunklin; Mrs. G. D. Glover; Mrs. W. R. Morgan; J. Fielding Reed; James C. Totman; Mrs. J. J. Well-don.

HORSESHOE PITCHING CONTEST COMMITTEE: Chairman, A. A. Schultz; H. G. Cunningham; W. Gedge Gayle; C. R. Martin.

BRIDGE AND CANASTA COMMITTEE Chairman, Mrs. James A. Naftel; Mrs. M. Ward Cole; Mrs. John W. Hall; Mrs. B. P. Redman, Jr.; Mrs. J. Fielding Reed; Mrs. John R. Taylor, Jr.

COMMITTEE ON PRIZES: Jeff Collins; R. L. King; Mrs. E. M. Kolb; Mrs. J. E. Totman.

Kraft Bag

Demonstrates Closure

The Kraft Bag Corporation has just sent out to thousands of prospective users a full size 80 lb Kraftlok fertilizer bag, with a message printed on its face. The bag is sewn with red looper thread at both ends to facilitate opening and examining the inner construction of its new valve closure, the Company also issued 3 separate brochures. For sample bags or literature address Dept. P, KRAFT BAG CORPORATION, 630 Fifth Avenue, New York 20, N. Y. The Company is a subsidiary of Gilman Paper Co., and has two fully integrated plants at St. Marys, Georgia and Gilman, Vermont.

Davison Wins Award From Research Institute

The annual award of merit of the Associated Member Division of the Research Institute of America, Inc., was presented recently to Marlin G. Geiger, president of Davison Chemical Division at the company's Baltimore office.

The award is given annually to "bring out from under a bushel ideas developed during the working day in

areas of executive development, human relations and manpower utilization." Davison won for its system of "on the spot" photographs to dramatize the company's safety, good housekeeping and cost-control programs.

Norman J. Wardell, industrial relations manager of the company's Cincinnati plant, who made the entry, received a separate citation at Cincinnati.

LAST MINUTE NEWS

Bagpak Plant Ready In July

A new converting plant for the production of multiwall sacks will be opened in Mobile, Alabama, by the Bagpak Division of International Paper Company, it was announced May 24 by A. A. Scholl, Division Manager. The new plant, which is due to start operations in mid-July, is adjacent to International's Mobile paper mill.

The plant's senior personnel will include S. D. Andrew, Plant Manager; C. B. McCord, Assistant Plant Manager, and Asa Morgan, Superintendent.

Fulton Bag In Salt Lake City

Fulton Bag announces the establishment in Salt Lake City of a resident sales representative. Named to this post is William P. Gatts of Los Angeles, who formerly served in the Sales Department of Fulton's plant in that city. Gatts will represent Fulton Bag in the states of Utah and Idaho, and is widely known in bag circles throughout the Mid-West and West. Fulton, at the same time, has announced the resignation of Horace Smith, Rupert, Idaho, from the company's sales organization.

"No Subsidies" Reiterated By Secretary Benson

Secretary of Agriculture Benson reiterates in the current issue of The American Magazine his stand that the answer to the nation's farm

problems is not high fixed price supports.

Despite steadily growing pressure even from within his own party, Secretary Benson told staff writer Roul Tunley: "Personally, I don't feel any fears. I try to do the thing I believe to be right and let the chips fall where they will."

In an article entitled "Everyone Picks on Benson," the Secretary of Agriculture, who is the first clergyman to hold a U.S. cabinet post in a hundred years, was firm in his belief that "God helps those who help themselves" and that "no real American wants to be subsidized."

On the subject of price supports to farmers which he recently lowered from 90 to 75 per cent of parity, Benson insisted: "Increased consumption at home and abroad is the answer to the farm problem . . . We must find new uses for farm products. We must step up research. We must try to put food into stomachs, not into storage bins."

Benson's real devotion to spiritual values and to his religion, Tunley writes, have enabled him to remain the calmest man in Washington although he sits in the capital's hottest seat. Another cabinet officer has even remarked: "Every night when I go to bed I thank God I'm not the Secretary of Agriculture."

Benson's seat, Tunley writes, can only become hotter in this election year and his independent stand may well cost him his job. Especially if Congress adopts, and the President signs, a program which Benson's conscience cannot permit him to administer.



GRADUATION . . .

It's graduation time on campuses all over the nation! You hear the college songs—see lines of bright faces set off with the traditional caps and gowns. These young people are thinking about the future—jobs and marriage.

We're glad to note that many business leaders are accepting invitations to make "the graduation address." The inspiration these leaders impart to graduates often makes lasting impressions. It's a tribute to both the man and his business to receive this honor. It's citizenship in action.

—"The Indian"

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